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Term:

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Search History

DATE: Thursday, July 21, 2005 Printable Copy Create Case

Set Name side by side	**Query**	**Hit Count**	**Set Name** result set
DB=USPT; PLUR=YES; OP=ADJ			
L8	6653832.pn.	1	L8
L7	6653832.pn.	1	L7
L6	6670811.pn.	1	L6
L5	6133733.pn.	1	L5
L4	6133733.pn.	1	L4
L3	6670811.pn.	1	L3
L2	6670811.pn.	1	L2
DB=PGPB,USPT,USOC,EPAB,JPAB,DWPI,TDBD; PLUR=YES; OP=ADJ			
L1	6836115	2	L1

END OF SEARCH HISTORY

Refine Search

Search Results -

Term	Documents
(20 AND 16).PGPB,USPT,USOC,EPAB,JPAB,DWPI,TDBD.	12
(L20 AND L16).PGPB,USPT,USOC,EPAB,JPAB,DWPI,TDBD.	12

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Search: L21

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Set Name side by side	Query	Hit Count	Set Name result set
	DB=PGPB,USPT,USOC,EPAB,JPAB,DWPI,TDBD; PLUR=YES; OP=ADJ		
L21	L20 and L16	12	L21
L20	L19 and L15	22	L20
L19	(computerized adj tomography)	4630	L19
L18	(computer$4 with tomography)	12593	L18
L17	L16 and L12	3	L17
L16	L15 and L13	160	L16
L15	L10 and (non-crystalline or biological or protein)	984	L15
L14	L12 and (fourier)	4	L14
L13	L10 and (fourier)	366	L13
L12	L9 and (ferromagnetic adj sphere)	14	L12
L11	L9 and (ferromagnetic adj sphere)	14	L11
L10	L9 and ((ferromagnetic adj sphere) or ferromagnetic)	3169	L10
L9	((magnetic adj resonance) or NMR or MRI)	207531	L9

DB=USPT; PLUR=YES; OP=ADJ

L8	6653832.pn.	1	L8
L7	6653832.pn.	1	L7
L6	6670811.pn.	1	L6
L5	6133733.pn.	1	L5
L4	6133733.pn.	1	L4
L3	6670811.pn.	1	L3
L2	6670811.pn.	1	L2

DB=PGPB,USPT,USOC,EPAB,JPAB,DWPI,TDBD; PLUR=YES; OP=ADJ

L1	6836115	2	L1

END OF SEARCH HISTORY

Refine Search

Search Results -

Term	Documents
(20 AND 16).PGPB,USPT,USOC,EPAB,JPAB,DWPI,TDBD.	12
(L20 AND L16).PGPB,USPT,USOC,EPAB,JPAB,DWPI,TDBD.	12

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Search: L21

Refine Search

Recall Text Clear Interrupt

Search History

DATE: Thursday, July 21, 2005 Printable Copy Create Case

Set Name side by side	Query	Hit Count	Set Name result set
	DB=PGPB,USPT,USOC,EPAB,JPAB,DWPI,TDBD; PLUR=YES; OP=ADJ		
L21	L20 and L16	12	L21
L20	L19 and L15	22	L20
L19	(computerized adj tomography)	4630	L19
L18	(computer$4 with tomography)	12593	L18
L17	L16 and L12	3	L17
L16	L15 and L13	160	L16
L15	L10 and (non-crystalline or biological or protein)	984	L15
L14	L12 and (fourier)	4	L14
L13	L10 and (fourier)	366	L13
L12	L9 and (ferromagnetic adj sphere)	14	L12
L11	L9 and (ferromagnetic adj sphere)	14	L11
L10	L9 and ((ferromagnetic adj sphere) or ferromagnetic)	3169	L10
L9	((magnetic adj resonance) or NMR or MRI)	207531	L9

DB=USPT; PLUR=YES; OP=ADJ

L8	6653832.pn.	1	L8
L7	6653832.pn.	1	L7
L6	6670811.pn.	1	L6
L5	6133733.pn.	1	L5
L4	6133733.pn.	1	L4
L3	6670811.pn.	1	L3
L2	6670811.pn.	1	L2

DB=PGPB,USPT,USOC,EPAB,JPAB,DWPI,TDBD; PLUR=YES; OP=ADJ

L1	6836115	2	L1

END OF SEARCH HISTORY

Hit List

Clear | Generate Collection | Print | Fwd Refs | Bkwd Refs
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Search Results - Record(s) 1 through 3 of 3 returned.

☐ 1. Document ID: US 6836115 B2

L2: Entry 1 of 3 File: USPT Dec 28, 2004

US-PAT-NO: 6836115
DOCUMENT-IDENTIFIER: US 6836115 B2

TITLE: Method for high resolution magnetic resonance analysis using magic angle technique

DATE-ISSUED: December 28, 2004

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Wind; Robert A.	West Richland	WA		
Hu; Jian Zhi	Richland	WA		

US-CL-CURRENT: 324/307; 324/309, 324/314

Full | Title | Citation | Front | Review | Classification | Date | Reference | Claims | KWIC | Draw D

☐ 2. Document ID: US 6670811 B2

L2: Entry 2 of 3 File: USPT Dec 30, 2003

US-PAT-NO: 6670811
DOCUMENT-IDENTIFIER: US 6670811 B2

TITLE: Method for high resolution magnetic resonance analysis using magic angle technique

DATE-ISSUED: December 30, 2003

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Wind; Robert A.	West Richland	WA		
Hu; Jian Zhi	Richland	WA		

US-CL-CURRENT: 324/307; 324/309, 324/314

Full | Title | Citation | Front | Review | Classification | Date | Reference | Claims | KWIC | Draw D

☐ 3. Document ID: US 6653832 B2

L2: Entry 3 of 3 File: USPT Nov 25, 2003

US-PAT-NO: 6653832
DOCUMENT-IDENTIFIER: US 6653832 B2

TITLE: Method for high resolution magnetic resonance analysis using magic angle technique

DATE-ISSUED: November 25, 2003

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Wind; Robert A.	West Richland	WA		
Hu; Jian Zhi	Richland	WA		

US-CL-CURRENT: 324/307; 324/309, 324/314

Full | Title | Citation | Front | Review | Classification | Date | Reference | | | Claims | KWIC | Draw. D

Clear | Generate Collection | Print | Fwd Refs | Bkwd Refs | Generate OACS

Term	Documents
WIND	430121
WINDS	52050
(1 AND (WIND.IN.)).PGPB,USPT,USOC,EPAB,JPAB,DWPI,TDBD.	3
(L1 AND (WIND.IN.)).PGPB,USPT,USOC,EPAB,JPAB,DWPI,TDBD.	3

Display Format: - Change Format

Previous Page Next Page Go to Doc#

Refine Search

Search Results -

Term	Documents
WIND	430121
WINDS	52050
(1 AND (WIND.IN.)).PGPB,USPT,USOC,EPAB,JPAB,DWPI,TDBD.	3
(L1 AND (WIND.IN.)).PGPB,USPT,USOC,EPAB,JPAB,DWPI,TDBD.	3

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Search: L2

Refine Search

Recall Text Clear Interrupt

Search History

DATE: Thursday, July 21, 2005 Printable Copy Create Case

Set Name side by side	**Query**	**Hit Count**	**Set Name** result set
DB=PGPB,USPT,USOC,EPAB,JPAB,DWPI,TDBD; PLUR=YES; OP=ADJ			
L2	L1 and (wind.in.)	3	L2
L1	fetzner	261	L1

END OF SEARCH HISTORY

6/3,AB/1 (Item 1 from file: 2)
DIALOG(R)File 2:INSPEC

7902546 INSPEC Abstract Number: A2004-09-7650-001
Title: Two-dimensional **magnetic** **resonance** tomographic microscopy using ferromagnetic probes
Author(s): **Barbic, M.**; Scherer, A.
Author Affiliation: Appl. Phys. & Electr. Eng. Depts., California Inst. of Technol., Pasadena, CA, USA
Journal: Journal of Applied Physics vol.95, no.7 p.3598-606
Publisher: AIP,
Publication Date: 1 April 2004 Country of Publication: USA
CODEN: JAPIAU ISSN: 0021-8979
SICI: 0021-8979(20040401)95:7L.3598:DMRT;1-8
Material Identity Number: J004-2004-005
U.S. Copyright Clearance Center Code: 0021-8979/2004/95(7)/3598(9)/$22.00
Language: English
Abstract: We introduce the concept of computerized tomographic microscopy in **magnetic** **resonance** **imaging** using the **magnetic** **fields** and **field** gradients from a ferromagnetic probe. We investigate a configuration where a two-dimensional sample is under the influence of a large static polarizing field, a small perpendicular **radio-frequency** **field**, and a **magnetic** **field** from a **ferromagnetic** **sphere**. We demonstrate that, despite the nonuniform and nonlinear nature of the **fields** from a microscopic **magnetic** sphere, the concepts of computerized tomography can be applied to obtain proper image reconstruction from the original spectral data by sequentially varying the relative sample-sphere angular orientation. The analysis shows that the recent proposal for atomic resolution **magnetic** **resonance** **imaging** of discrete periodic crystal lattice planes using ferromagnetic probes can also be extended to two-dimensional imaging of noncrystalline samples with resolution ranging from micrometer to angstrom scales.
Subfile: A

6/3,AB/2 (Item 2 from file: 2)
DIALOG(R)File 2:INSPEC

7519977 INSPEC Abstract Number: A2003-05-0758-002
Title: Sample-detector coupling in atomic resolution **magnetic** **resonance** diffraction
Author(s): **Barbic, M.**; Scherer, A.
Author Affiliation: Dept. of Appl. Phys. & Electr. Eng., California Inst. of Technol., Pasadena, CA, USA
Journal: Journal of Applied Physics vol.92, no.12 p.7345-54
Publisher: AIP,
Publication Date: 15 Dec. 2002 Country of Publication: USA
CODEN: JAPIAU ISSN: 0021-8979
SICI: 0021-8979(20021215)92:12L.7345:SDCA;1-G
Material Identity Number: J004-2002-021
U.S. Copyright Clearance Center Code: 0021-8979/2002/92(12)/7345(10)/$19.
00
Language: English
Abstract: A technique for potential realization of atomic resolution **magnetic** **resonance** diffraction was recently proposed for the

case of a crystalline sample in proximity of a **ferromagnetic sphere** [M. Barbic, J. Appl. Phys. 91, 9987 (2002)]. This article predicted the detection of distinct peaks in the number of resonant spin sites at different **magnetic field** values for specific sphere and crystal configurations. Here, the focus is on the specific detection coupling mechanisms between the resonant spin population of the sample and the magnetic sphere probe. We investigate and compare the force, torque, and flux detection mechanisms in order to provide guidance to the experimental efforts towards the realization of the atomic resolution **magnetic resonance** diffraction. We also investigate the dependence of the **magnetic resonance** diffraction spectrum on the relative position of the magnetic sphere with respect to the crystal lattice.

Subfile: A

6/3,AB/3 (Item 3 from file: 2)

DIALOG(R)File 2:INSPEC

7297863 INSPEC Abstract Number: A2002-15-6116N-001

Title: **Magnetic resonance** diffraction using the **magnetic field** from a **ferromagnetic sphere**

Author(s): **Barbic, M.**

Author Affiliation: Dept. of Appl. Phys. M/S, California Inst. of Technol., Pasadena, CA, USA

Journal: Journal of Applied Physics vol.91, no.12 p.9987-94

Publisher: AIP,

Publication Date: 15 June 2002 Country of Publication: USA

CODEN: JAPIAU ISSN: 0021-8979

SICI: 0021-8979(20020615)91:12L.9987:MRDU;1-V

Material Identity Number: J004-2002-009

U.S. Copyright Clearance Center Code: 0021-8979/2002/91(12)/9987(8)/$19.0
0

Language: English

Abstract: The theory of **magnetic resonance** diffraction is developed for the case of a crystal in close proximity of a **ferromagnetic sphere**. Distinct spectral peaks in the **magnetic resonance** signal are discovered for the specific **ferromagnetic sphere** and **magnetic field** configurations, and the appearance of the peaks is a direct signature of the presence of discrete atomic sites in the crystal lattice. The positions of the spectral peaks are sensitive to the crystal unit-cell size, thereby providing a method for determination of the basic parameters of the crystal at the atomic scale. The appearance of the spectral peaks is explained, and the dependence of the **magnetic resonance** spectra on the sphere size and the angle of the sphere magnetization with respect to the sample surface is analyzed. Applications to the studies of crystals, thin films, and crystallites are reviewed, and potential measurement methods for the confirmation of the diffraction theory are proposed. The analysis suggests that the long-desired goal of detecting atomic resolution **magnetic resonance** diffraction is well within reach of current experimental techniques.

Subfile: A

6/3,AB/4 (Item 1 from file: 350)

DIALOG(R)File 350:Derwent WPIX

016686785
WPI Acc No: 2005-011066/200501
XRPX Acc No: N05-008887
Tomographic **magnetic resonance imaging** method, involves reconstructing image of non-crystalline sample based on signal obtained from magnetically resonant spins using computerized tomography
Patent Assignee: CALIFORNIA INST OF TECHNOLOGY (CALY)
Inventor: **BARBIC M**
Number of Countries: 001 Number of Patents: 001
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
US 20040232914	A1	20041125	US 2003471803	P	20030520	200501	B
			US 2004849764	A	20040520		

Priority Applications (No Type Date): US 2003471803 P 20030520; US 2004849764 A 20040520
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
US 20040232914	A1		25	G01V-003/00	Provisional application US 2003471803

Abstract (Basic): US 20040232914 A1
Abstract (Basic):
NOVELTY - The method involves introducing a **radio-frequency field** perpendicular to a **magnetic field.** A number of **magnetically** resonant spins of a non-crystalline sample are simultaneously obtained by sequentially rotating the sample with respect to a **ferromagnetic sphere** around a prescribed axis. An image of the sample is reconstructed based on a signal obtained from the magnetically resonant spins using a computerized tomography.

DETAILED DESCRIPTION - An INDEPENDENT CLAIM is also included for a system for imaging tomographic **magnetic resonance**.

USE - Used for imaging tomographic **magnetic resonance** using magnetic probes.

ADVANTAGE - The method permits two-dimensional imaging of the non-crystalline samples with atomic resolution ranging from micrometers to Angstrom scales.

DESCRIPTION OF DRAWING(S) - The drawing shows an illustration of electron microscope images of a multi-functional nanostructure/nanowire resonator that may be used for high sensitivity detection.

pp; 25 DwgNo 14a/16

8/3,AB/1 (Item 1 from file: 155)
DIALOG(R)File 155:MEDLINE(R)

17768236 PMID: 15826129
Nanomagnetic planar **magnetic resonance** microscopy "lens".
Barbic Mladen; Scherer Axel
Department of Physics and Astronomy, California State University, Long Beach, 1250 Bellflower Boulevard, Long Beach, California 90840, USA. mbarbic@csulb.edu
Nano Lett (United States) Apr 2005, 5 (4) p787-92, ISSN 1530-6984
Journal Code: 101088070
Publishing Model Print
Document type: Journal Article
Languages: ENGLISH
Main Citation Owner: NLM
Record type: In Process
The achievement of three-dimensional atomic resolution **magnetic resonance** microscopy remains one of the main challenges in the visualization of biological molecules. The prospects for single spin microscopy have come tantalizingly close due to the recent developments in sensitive instrumentation. Despite the single spin detection capability in systems of spatially well-isolated spins, the challenge that remains is the creation of conditions in space where only a single spin is resonant and detected in the presence of other spins in its natural dense spin environment. We present a nanomagnetic planar design where a localized Angstrom-scale point in three-dimensional space is created above the nanostructure with a nonzero minimum of the **magnetic field** magnitude. The design thereby represents a **magnetic resonance** microscopy "lens" where potentially only a single spin located in the "focus" spot of the structure is resonant. Despite the presence of other spins in the Angstrom-scale vicinity of the resonant spin, the high gradient **magnetic field** of the "lens" renders those spins inactive in the detection process.

8/3,AB/2 (Item 2 from file: 155)
DIALOG(R)File 155:MEDLINE(R)

17573736 PMID: 15792437
Composite nanowire-based probes for **magnetic resonance** force microscopy.
Barbic Mladen; Scherer Axel
Department of Physics and Astronomy, California State University, Long Beach, 1250 Bellflower Blvd., Long Beach, California 90840, USA. mbarbic@csulb.edu
Nano Lett (United States) Jan 2005, 5 (1) p187-90, ISSN 1530-6984
Journal Code: 101088070
Publishing Model Print
Document type: Journal Article
Languages: ENGLISH
Main Citation Owner: NLM
Record type: In Process
We present a nanowire-based methodology for the fabrication of ultrahigh sensitivity and resolution probes for atomic resolution **magnetic resonance** force microscopy (MRFM). The fabrication technique combines electrochemical deposition of multifunctional metals into nanoporous polycarbonate membranes and chemically selective electroless deposition of optical nanoreflector onto the nanowire. The completed composite nanowire

structure contains all the required elements for an ultrahigh sensitivity and resolution MRFM sensor with (a) a magnetic nanowire segment providing atomic resolution **magnetic field imaging** gradients as well as large force gradients for high sensitivity, (b) a noble metal enhanced nanowire segment providing efficient scattering cross-section from a sub-wavelength source for optical readout of nanowire vibration, and (c) a nonmagnetic/nonplasmonic nanowire segment providing the cantilever structure for mechanical detection of **magnetic resonance.**

8/3,AB/3 (Item 1 from file: 350)
DIALOG(R)File 350:Derwent WPIX

015837403
WPI Acc No: 2003-899607/200382
XRPX Acc No: N03-718045

Magnetic resonance imaging method for e.g. large crystals, involves detecting **magnetic resonance** of magnetic spins produced by applying direct current and **radio frequency** field to sample surface in respective directions

Patent Assignee: CALIFORNIA INST OF TECHNOLOGY (CALY); BARBIC M (BARB-I)
Inventor: **BARBIC M**
Number of Countries: 100 Number of Patents: 003
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
US 20030193333	A1	20031016	US 2002372003	P	20020412	200382	B
			US 2003411769	A	20030411		
WO 200387880	A1	20031023	WO 2003US11296	A	20030411	200382	
AU 2003224940	A1	20031027	AU 2003224940	A	20030411	200436	

Priority Applications (No Type Date): US 2002372003 P 20020412; US 2003411769 A 20030411
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
US 20030193333	A1		15	G01V-003/00	Provisional application US 2002372003
WO 200387880	A1	E		G01V-003/00	

Designated States (National): AE AG AL AM AT AU AZ BA BB BG BR BY BZ CA CH CN CO CR CU CZ DE DK DM DZ EC EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MA MD MG MK MN MW MX MZ NO NZ OM PH PL PT RO RU SD SE SG SK SL TJ TM TN TR TT TZ UA UG UZ VN YU ZA ZM ZW
Designated States (Regional): AT BE BG CH CY CZ DE DK EA EE ES FI FR GB GH GM GR HU IE IT KE LS LU MC MW MZ NL OA PT RO SD SE SI SK SL SZ TR TZ UG ZM ZW

AU 2003224940 A1 G01V-003/00 Based on patent WO 200387880

Abstract (Basic): US 20030193333 A1
Abstract (Basic):

NOVELTY - A magnetic particle (12) is positioned near the surface (14) of a sample (16). A strong direct current (DC) **magnetic field** is applied in non-perpendicular direction relative to sample surface. A **radio frequency (RF)** field is applied in perpendicular direction to produce **magnetic resonance** of multiple magnetic spins (20) of sample in a region near the magnetic particle. The **magnetic resonance** of multiple magnetic spins is detected.

DETAILED DESCRIPTION - An INDEPENDENT CLAIM is also included for method of measuring sample.

USE - For imaging samples such as large crystals, thin films, small crystallites.

ADVANTAGE - Appropriate detection of the atomic lattice planes of samples, without complicated operations and with reduced thermal fluctuations, is performed.

DESCRIPTION OF DRAWING(S) - The figure shows a schematic view of the **magnetic resonance imaging** process of samples.

imaging device (10)
magnetic particle (12)
surface of sample (14)
sample (16)
magnetic spins (20)
pp; 15 DwgNo 1/8

26/3,AB/1   (Item 1 from file: 350)
DIALOG(R)File 350:Derwent WPIX

014621768
WPI Acc No: 2002-442472/200247
Related WPI Acc No: 1997-371706; 1998-311599; 2000-160398; 2000-204430; 2000-422425; 2001-111799; 2001-181226; 2001-289436; 2001-353114; 2001-564017; 2001-615238; 2001-615474; 2002-146605; 2002-224912; 2002-433618; 2002-565450; 2002-588656; 2002-705090; 2003-038211; 2003-038364; 2003-089705; 2003-246999; 2003-287573; 2003-327894; 2003-352068; 2003-415731; 2003-531102; 2003-708020; 2003-742732; 2003-895405; 2005-210002
XRPX Acc No: N02-348463
Magnetic resonance imaging apparatus includes stationary electromagnets mounted in yoke for generating magnetic flux flowing from one to the other of pole faces of **ferromagnetic** yoke
Patent Assignee: FONAR CORP (FONA-N)
Inventor: DAMADIAN R V; DAMADIAN T; DANBY G T; HSIEH H; MORRONE T
Number of Countries: 001 Number of Patents: 001
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
US 6373251	B1	20020416	US 92952810	A	19920928	200247	B
			US 92993072	A	19921218		
			US 99295532	A	19990421		

Priority Applications (No Type Date): US 92993072 A 19921218; US 92952810 A 19920928; US 99295532 A 19990421
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
US 6373251	B1		31	G01V-003/00	CIP of application US 92952810
					Div ex application US 92993072
					CIP of patent US 5754085

Abstract (Basic): US 6373251 B1
Abstract (Basic):
NOVELTY - A ring-shaped **ferromagnetic** yoke (161) having a pair of opposing pole faces (162,163), is **rotated** to arbitrary **angle** with respect to a vertical axis by a support. A gap is formed between the pole faces for receiving a patient. The stationary electromagnets (168,169) mounted in the yoke, generate magnetic flux flowing from one to the other of pole faces through the gap.

USE - In medical **magnetic resonance** scanning, in **magnetic resonance** guided surgery, MR diagnosis, MR therapy and testing of industrial sized articles.

ADVANTAGE - As simultaneous scanning of multiple patients increases the number of patients per hour, the utilization of expensive **magnetic resonance** system is improved, thus the cost is lowered. The use of magnetically tipped probes or other MR visible surgical instruments allows the surgeon to position his instruments by MR visualization. Facilitates the surgeon to operate efficiently, as the internal organs are visualized efficiently. As the additional **MR images** guide the course of the surgery, the anatomical changes and other effects of the surgery are viewed by the surgeon without having to visually observe the region of the patient. Increases MR sensitivity as the patient is **rotated** to arbitrary **angle** . Allows non-destructive testing of industrial sized articles. Allows continuous monitoring of the surgery by **MR imaging** throughout the entire course of the surgery.

DESCRIPTION OF DRAWING(S) - The figure shows a sectional view of the **magnetic resonance imaging** apparatus.
Ring-shaped **ferromagnetic** yoke (161)
Pole faces (162,163)
Stationary electromagnets (168,169)
pp; 31 DwgNo 14A/18

26/3,AB/2 (Item 2 from file: 350)
DIALOG(R)File 350:Derwent WPIX

004339033
WPI Acc No: 1985-165911/198528
XRAM Acc No: C85-072574
XRPX Acc No: N85-124878
Thin film magnetic sensor - for determining position, movement or rotation of magnetisable component
Patent Assignee: STANDARD ELEKTRIK LORENZ AG (INTT)
Inventor: VOLZ H
Number of Countries: 005 Number of Patents: 006
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
DE 3346643	A	19850704	DE 3346643	A	19831223	198528	B
GB 2151793	A	19850724	GB 8431017	A	19841207	198530	
FR 2557310	A	19850628	FR 8419780	A	19841224	198532	
JP 60227178	A	19851112				198551	
GB 2151793	B	19861210				198650	
US 4649755	A	19870317	US 84685869	A	19841224	198713	

Priority Applications (No Type Date): DE 3346643 A 19831223
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
DE 3346643	A		13		

Abstract (Basic): DE 3346643 A
A sensor for magnetisable materials consists of an inductive component and an evaluation circuit for determining changes in inductivity of the inductive component. The inductive component consists of thin films formed on a substrate, one of these films consisting of magnetisable material and forming a magnetic circuit (11) with a gap (12). The other films cross over and under the genetic circuit at a location remote from the gap (12) to form a coil (13) separated from the circuit by insulating interlayers (14,15).
Also claimed are an arrangement for detecting rotational movement using the sensor and a combustion engine and a flow meter including the arrangement.
USE/ADVANTAGE - The sensor is useful for determining position, **rotational angle** and rate of revolution of magnetisable components, e.g. for measuring the velocity, distance of travel and engine speed of vehicles, for initiating **rotational angle** -dependent electrical processes of i.c. engines (sparking and opening and closing of electrically actuated valves), for flow meters (e.g. measuring fuel consumption of vehicles), for linear motion position determination (e.g. as a contact for controlling a lift), and for determining the degree of filling of a container with a liq. having ferroelectric properties. The sensor provides high precision detection of the position of a magnetisable component.
Abstract (Equivalent): GB 2151793 B
A sensor for magnetisable materials consisting of an inductive

component and an evaluating circuit with which changes in the inductance of the inductive component can be sensed, characterised in that the inductive component (1) consists of thin layers on a substrate (10), that one of the layers is made of magnetisable material and forms a magnetic circuit (11) with a gap (12), that further layers passing partly over and partly under the magnetic circuit (11) at a point of the circuit (11) remote from the gap (12) form a coil (13) surrounding the circuit (11), and that the circuit (11) is separated from the coil (13) by intermediate insulating layers (14, 15).-

Abstract (Equivalent): US 4649755 A

Magnetisable material sensor has an inductive component with thin layers fixed on a substrate. One layer is magnetisable material forming a magnetic circuit with a gap in it. Other layers pass partly over and under the circuit at a point away from the gap and form a coil surrounding the circuit. Intermediate layers insulate the circuit from the coil and the circuit is made of at least one **ferromagnetic** amorphous metal alloy. The alloy includes Fe gp. transition elements together with C, Si or Ge.

USE/ADVANTAGE - Vehicle drive gear or engine speed sensor, engine valve controls, or lift control mechanism contact etc.. The sensor is highly sensitive even at gap widths less than 10 times the thickness of the magnetic circuit. (5pp

30/3,AB/1 (Item 1 from file: 350)
DIALOG(R)File 350:Derwent WPIX

016636654
WPI Acc No: 2004-795367/200478
XRPX Acc No: N04-626905
Magnetic resonance imaging method involves producing images of unit areas from echo signal that corresponds to unit areas and combining unit area images selectively to produce whole image
Patent Assignee: HITACHI MEDICAL CORP (HITR)
Inventor: TAKAHASHI T; TAKIZAWA M; TANIGUCHI Y
Number of Countries: 108 Number of Patents: 002
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
WO 200493682	A1	20041104	WO 2004JP5928	A	20040423	200478	B
JP 2004344183	A	20041209	JP 2003119403	A	20030424	200481	

Priority Applications (No Type Date): JP 2003119403 A 20030424
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
WO 200493682	A1	J	46	A61B-005/055	

Designated States (National): AE AG AL AM AT AU AZ BA BB BG BR BW BY BZ CA CH CN CO CR CU CZ DE DK DM DZ EC EE EG ES FI GB GD GE GH GM HR HU ID IL IN IS KE KG KP KR KZ LC LK LR LS LT LU LV MA MD MG MK MN MW MX MZ NA NI NO NZ OM PG PH PL PT RO RU SC SD SE SG SK SL SY TJ TM TN TR TT TZ UA UG US UZ VC VN YU ZA ZM ZW
Designated States (Regional): AT BE BG BW CH CY CZ DE DK EA EE ES FI FR GB GH GM GR HU IE IT KE LS LU MC MW MZ NL OA PL PT RO SD SE SI SK SL SZ TR TZ UG ZM ZW

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
JP 2004344183	A		19	A61B-005/055	

Abstract (Basic): WO 200493682 A1
Abstract (Basic):
NOVELTY - Multiple images of unit areas are produced from echo signal that corresponds to the unit areas. The **rotation angle** of unit areas that centers on origin of K space is changed and repeated. The unit area images are combined selectively to produce a whole image, so that measurement of echo signal is reduced for the unit areas.
DETAILED DESCRIPTION - An INDEPENDENT CLAIM is also included for **magnetic resonance imaging** system.
USE - For producing **tomographic** image of test region by **nuclear magnetic resonance** (**NMR**) phenomena.
ADVANTAGE - Even if the position of object changes slightly during imaging the imaging process is performed without error, thereby producing a reconstructed image.
DESCRIPTION OF DRAWING(S) - The figure explains the image processing method.
coordinate systems (301-304)
gridding (114)
pp; 46 DwgNo 1/10

30/3,AB/2 (Item 2 from file: 350)
DIALOG(R)File 350:Derwent WPIX

012144051
WPI Acc No: 1998-560963/199848

XRPX Acc No: N98-437368
MRI apparatus for generating tomogram of human body - has gradient **magnetic field** generator which produces gradient **magnetic field** whose basic axis is rotated based on **rotation angle** of top plate of patient bed and made in accord with standard photography axis
Patent Assignee: HITACHI MEDICAL CORP (HITR)
Number of Countries: 001 Number of Patents: 001
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
JP 10248823	A	19980922	JP 9755230	A	19970310	199848	B

Priority Applications (No Type Date): JP 9755230 A 19970310
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
JP 10248823	A		7	A61B-005/055	

Abstract (Basic): JP 10248823 A

The apparatus has a static **magnetic field** generator (2) that provides a static **magnetic field** to a patient body (1) lying on the rotatable top plate (11) of a bed (12) set in a photography area. A gradient **magnetic field** generator (3) applies a three-dimensional gradient **magnetic field** to the examined body. A signal detector determines a **nuclear magnetic resonance** signal caused in the examined body due to the irradiation of a high-frequency pulse to the examined body.

A signal processor (9) reconfigures the cross-sectional image of the examined body based on the detected **nuclear magnetic resonance** signal. The processed cross-sectional image is shown on a display device (10). The standard cross-sectional image of the examined body corresponds to the basic axis (15) of the gradient **magnetic field**. The basic axis of the gradient **magnetic field** is rotated depending on the **rotation angle** of the top plate of the bed. A standard photography axis is made in accord with the basic axis of the **magnetic** gradient **field**.

ADVANTAGE - Improves operability since standard photography axis and basic axis of gradient **magnetic field** is made in accord correctly. Prevents reduction of strength of gradient **magnetic field**.

Dwg.1/11

30/3,AB/3 (Item 3 from file: 350)
DIALOG(R)File 350:Derwent WPIX

009729244
WPI Acc No: 1994-009094/199402
XRPX Acc No: N94-007347
Pulse sequence for rapid image generation in **NMR tomography** - spacing **RF** pulses by less than spin grid relaxation time, providing read-out gradient with part pulses of alternate polarity and applying perpendicular phase encoded gradient.
Patent Assignee: SIEMENS AG (SIEI)
Inventor: BRUDER H
Number of Countries: 004 Number of Patents: 002
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
EP 576712	A1	19940105	EP 92111274	A	19920703	199402	B

US 5337000 A 19940809 US 9378107 A 19930618 199431

Priority Applications (No Type Date): EP 92111274 A 19920703
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
EP 576712	A1	G	10	G01R-033/56	
Designated States (Regional): DE FR IT					
US 5337000	A		10	G01V-003/00	

Abstract (Basic): EP 576712 A

A homogeneous **magnetic field** aligns nuclear spins in a region in a defined direction. A high frequency pulse (**RF**) flips the **spins** through an **angle** less than 90 deg. A read-out gradient (GRO) with partial pulses of alternating polarity is applied, whereby a nuclear resonance signal (S1,etc.) in the form of an echo occurs for each partial pulse. At least part of this signal is read out.

A phase encoding gradient (GPC) applied before each read-out signal perpendicular to the read-out gradient superimposes other phase information onto each read-out signal. The cycle is repeated a number of times with the interval between high frequency pulses less than the spin-grid-relaxation time.

USE/ADVANTAGE - For acquiring nuclear spin resonance signals from nuclei with defined spin-grid-relaxation time. Good signal/noise ratio is achieved with short measurement time and low technological requirements.

Dwg.1-6/13

Abstract (Equivalent): US 5337000 A

The method comprises generating a uniform **magnetic field** in which the examination region is disposed, and generating a **radio-frequency** pulse in the examination region for deflecting the nuclear spins from the prescribed direction by a prescribed flip angle of less than 90 deg. After each **radio-frequency** pulse, the method involves generating a read-out gradient having sub-pulses of alternating polarity, and causing a **nuclear magnetic resonance** signal in the form of an echo to arise under each subpulse.

The method then comprises generating a phase-coding gradient in a direction perpendicular to the direction of the read-out gradient, before repeating the steps M times with the same flip angle. The method also comprises reconstructing an image of the examination region of the subject from the read-out **nuclear magnetic resonance** signals.

USE - A method for operating **nuclear magnetic resonance tomography** device for acquisition of **nuclear magnetic resonance** signals from examination region of subject containing nuclei having prescribed spin lattice relaxation time.

10-13/13

30/3,AB/4 (Item 4 from file: 350)
DIALOG(R)File 350:Derwent WPIX

008720525
WPI Acc No: 1991-224542/199131
XRPX Acc No: N91-171391

Magnetic resonance imaging system for **tomography**
- has automatic power control function for adjusting transmission power

of **RF** pulse to set desired flip **angle** of **spin**
Patent Assignee: TOSHIBA KK (TOKE)
Inventor: HANAWA M
Number of Countries: 002 Number of Patents: 002
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
EP 439119	A	19910731	EP 91100757	A	19910122	199131	B
US 5343149	A	19940830	US 91644530	A	19910123	199434	
			US 9394916	A	19930722		

Priority Applications (No Type Date): JP 9012471 A 19900124
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
EP 439119	A				
Designated States (Regional): DE					
US 5343149	A		9	G01V-003/00	Cont of application US 91644530

Abstract (Basic): EP 439119 A

In a **magnetic resonance imaging** system, a plane including only a portion of an object (P) to be examined in an imaging region having uniform field intensity is excited by using a gradient **magnetic field** Gz in the direction of the body axis of the object (P) as a slice gradient **magnetic field** regardless of a plane to be imaged. The peak values of MR echo signals are detected while the transmission power of the **RF** pulse is changed.

An **RF** pulse transmission power at which the maiximum peak value appears is detected from these detection values. The transmission power of the **RF** pulse in imaging, is attenuated on the basis of the relationship between the transmission power and the maximum peak value.

ADVANTAGE - Excellent contrast obtained. (11pp Dwg.No.4/8

Abstract (Equivalent): US 5343149 A

In a **magnetic resonance imaging** system having an automatic power control function for adjusting the transmission power of an **RF** pulse so as to set a desired flip **angle** of a **spin**, in an automatic power control mode, a plane including only a portion of an object to be examined in an imaging region having a uniform field intensity, e.g. a transaxial plane or a plane slightly inclined from the transaxial plane is excited by a gradient **magnetic field** Gz in the direction of the body axis of the object as a slice gradient **magnetic field** regardless of a plane to be imaged.

The peak values of MR echo signals are detected while the transmission power of the **RF** pulse is changed. An **RF** pulse transmission power at which the maximum peak value detected from these detection values. The transmission power of the **RF** pulse in imaging, i.e. the output of an **RF** oscillator having a predetermined frequency, is attenuated on the basis of the relationship between the transmission power and the maximum peak value, thereby adjusting the attenuation amount of an attenuator for supplying a current to an **RF** coil.

ADVANTAGE - Image data having excellent contrast can be obtained.
Dwg.4/8

30/3,AB/5 (Item 5 from file: 350)
DIALOG(R)File 350:Derwent WPIX

004723249

WPI Acc No: 1986-226591/198635
XRPX Acc No: N86-169091

Magnetic resonance imaging system for computer **tomography** - has regulator controlling power control unit on recorded **magnetic resonance** signal to ensure precise adjustment of power condition

Patent Assignee: TOSHIBA KK (TOKE)
Inventor: HANAWA M; HAYAKAWA H
Number of Countries: 002 Number of Patents: 003
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
DE 3605162	A	19860821	DE 3605162	A	19860218	198635	B
US 4675608	A	19870623	US 86829486	A	19860214	198727	
US 4806867	A	19890221	US 8752874	A	19870522	198910	

Priority Applications (No Type Date): JP 8532283 A 19850219
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
DE 3605162	A		24		

Abstract (Basic): DE 3605162 A

A regulator controls a power control unit as a function of the **magnetic resonance** signal from a detector. Pref. the regulator contains a device to register transmission power data when the detector receives the max. **magnetic resonance** signal. The regulator controls the power control unit to vary the power sequentially during excitation of the object by a rotating **magnetic field.**

The regulator may respond to a spin echo signal or a free induction drop signal produced by the magntic resonance. The power control unit may set a **spin** system inclination **angle** to a given value, e.g. 90 deg. or 180 deg. or both may be an amplitude or pulse width controller for the rotating **magnetic field** generator.

ADVANTAGE - The power condition can be adjusted precisely regardless of the particular features of the investigated object.

(24pp Dwg.No.0/5

Abstract (Equivalent): US 4806867 A

The **magnetic resonance imaging** system applies a uniform static **magnetic field** and a gradient **magnetic field** to an object it further applies an excitation rotating **magnetic** field to cause **magnetic resonance** phenomena in the object to detect the induced **magnetic resonance** signals and then to obtain image data by processing the **magnetic resonance** signals. The system has a power controller for controlling the transmission power in a transmitter for transmitting the excitation rotating field.

The system further has a transmission controller for controlling the power controller in response to the **magnetic resonance** signal which is received by the receiver from the object. The transmission controller controls the power controller to sequentially change the transmission power and detects the transmission power at which the maximum **magnetic resonance** signal is obtained in response to the reception signal by the receiver when the exciation rotating field is applied to the object, thereby controlling the power controller in accordance with the detected data.

ADVANTAGE - Reduced imaging time required. (10pp)

US 4675608 A

A uniform static **magnetic field** and a gradient **magnetic field** are applied to an object and also an excitation rotating **magnetic** field to cause **magnetic resonance** in the object. The induced **magnetic**

resonance signals are detected to obtain image data. The system has a power controller for controlling the transmission power in a transmitter for transmitting the excitation rotating field. The system also has a transmission controller which operates in response to the resonance signal received.

The controller sequentially changes the transmission power and detects the power at which the maximum resonance signal is obtained in response to the reception signal when the excitation rotating field is applied to the object. (10pp)h

30/3,AB/6 (Item 1 from file: 347)
DIALOG(R)File 347:JAPIO

03233630
HIGH FREQUENCY OUTPUT ADJUSTING METHOD

PUB. NO.: 02-209130 [JP 2209130 A]
PUBLISHED: August 20, 1990 (19900820)
INVENTOR(s): HATANAKA MASAHIKO
APPLICANT(s): TOSHIBA CORP [000307] (A Japanese Company or Corporation), JP (Japan)
APPL. NO.: 01-029330 [JP 8929330]
FILED: February 08, 1989 (19890208)
JOURNAL: Section: C, Section No. 775, Vol. 14, No. 505, Pg. 84, November 05, 1990 (19901105)

ABSTRACT

PURPOSE: To exactly set the condition of a high frequency output such as a 90 deg. pulse or 180 pulse and to obtain an exact signal by setting slice thickness tick so as to include the whole uniform area of a maximum high frequency coil when the inclination **angle** of a **spin** system magnetic moment is adjusted to a prescribed value.

CONSTITUTION: In a **nuclear magnetic resonance imaging** device 1, an inclined **magnetic field** generation coil 2 to generate an inclined **magnetic field** for obtaining the position information of a part, where a **magnetic resonance** signal is induced, and a high frequency coil 3 as a transmission/reception system to radiate a rotary high frequency **magnetic field** and to detect the induced **magnetic resonance** signal are provided. When an MR signal is obtained to set the high frequency output of the 90 deg. pulse and 180 deg. pulse, slice width S is set thick by adjusting a Z-axis inclined **magnetic field,** which is a **magnetic field** for slice, in advance so that the sensitivity of the maximum high frequency coil becomes the uniform area. Accordingly, even when a slice position is dislocated by breating motion, etc., for a part to be checked like the chest, the high frequency output of the 90 deg. pulse and 180 deg. pulse to induce a **magnetic resonance** phenomenon can be exactly adjusted and an exact **tomographic** picture can be obtained.

33/3,AB/1 (Item 1 from file: 350)
DIALOG(R)File 350:Derwent WPIX

013177585
WPI Acc No: 2000-349458/200030
XRAM Acc No: C00-106192
XRPX Acc No: N00-261806

Cylindrical Magic **Angle Spinning** sample container for use in ceramic Magic **Angle Spinning** rotor shell includes cell and sealing plug, both made of different materials with different modulus, tensile strength and density

Patent Assignee: DOTY SCI INC (DOTY-N)
Inventor: DOTY F D
Number of Countries: 001 Number of Patents: 001
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
US 6054857	A	20000425	US 9739348	A	19970318	200030	B
			US 9844686	A	19980318		

Priority Applications (No Type Date): US 9739348 P 19970318; US 9844686 A 19980318

Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
US 6054857	A		6	G01V-003/00	Provisional application US 9739348

Abstract (Basic): US 6054857 A
Abstract (Basic):

NOVELTY - A cylindrical Magic **Angle Spinning** (MAS) sample container has cell (21) and a chamber. A sealing plug (23) is contained. The cell and plug are made of material (I) and material (II) respectively, each having Young's modulus, tensile strength and density of Y1, S1, p1 (for I), Y2, S2 and p2 (for II) respectively. The materials are impermeable and satisfy specific properties and relations.

DETAILED DESCRIPTION - A cylindrical Magic **Angle Spinning** (MAS) sample container has cell (21) with uniform outside diameter (d4) and a sample chamber with concentric cylindrical opening at one end with inside diameter (d2). The sealing plug (23) with outer diameter (d1) is contained and d1-d2 is greater than 5 microns and less than 150 microns. The cell is made of material having Young's modulus of (Y1), tensile strength (S1) and density (p1). Plug is made of material having Young's modulus of (Y2), tensile strength (S2) and density (p2). The materials are impermeable and satisfy the following the properties and relations. Y1 is greater than 0.8 GPa, S1 is greater than 8 MPa, S2 is greater than 3 MPa, p2 is greater than 880 kg/m3 and p2divideY2 is greater than p1divideY1. The container is used inside a ceramic MAS rotor shell (22) with inner diameter (d5) where d5-d4 is positive and less than 50 microns.

INDEPENDENT CLAIMS are also included for the following: (i) A cylindrical MAS dual-chamber sample container having a cell made of material (I) with two isolated sample chambers having concentric cylindrical openings at opposite ends, and two compliant sealing stoppers made of material (II). (ii) Method of performing high resolution (HR) MAS **nuclear magnetic resonance** (**NMR**) experiment in which two separate cylindrically symmetric sealed containers one with deuterated solvent are spun inside a ceramic rotor.

USE - For use in HR MAS **NMR** experiment (claimed) for determining molecular or **microscopic** structures.

ADVANTAGE - The novel HR MAS cell can be loaded with 1000 of prepared samples and can be easily removed without contamination. The samples can be stored for further analysis in sealed cells for many years. The cell is inexpensive than ceramic cells. Using kel-f cells, 5 mm of rotor containing 100 mul plastic cell may be spun up to 10 kHz. Using polyimide caps, the kel-f cell may be spun over 18 kHz. Thus there is dramatic increase over conventional HR MAS spinning rates of 2-3 kHz. The dual-chamber cell allows the lock reference to be within 0.5 mm of the sample with non-degradation in Bo homogeneity regardless of susceptibility. The reference is external to the sample but proximity makes it perform more like an internal lock from a **radio frequency (RF)** and shimming perspective. The dual-chamber MAS cell can also be used for temperature calibration using a reference sample with known temperature-dependent chemical shift along with functioning as external lock in HR MAS.

DESCRIPTION OF DRAWING(S) - The figure shows cross-sectional view of sealing cell inside a ceramic rotor.

Cell (21)
Rotor shell (22)
Plug (23)
Sample (24)
pp; 6 DwgNo 2/4

33/3,AB/2 (Item 1 from file: 347)
DIALOG(R)File 347:JAPIO

04341428
MAGNETIC DOMAIN STRUCTURE ANALYZING DEVICE

PUB. NO.: 05-333128 [JP 5333128 A]
PUBLISHED: December 17, 1993 (19931217)
INVENTOR(s): FUJITA SHIOJI
FURUSAWA KENJI
YONEKAWA TAKAO
ABE KATSUO
APPLICANT(s): HITACHI LTD [000510] (A Japanese Company or Corporation), JP (Japan)
APPL. NO.: 04-136556 [JP 92136556]
FILED: May 28, 1992 (19920528)
JOURNAL: Section: P, Section No. 1712, Vol. 18, No. 162, Pg. 96, March 17, 1994 (19940317)

ABSTRACT

PURPOSE: To clear up a magnetic domain structure of a medium by changing freely the sample observing (light incident on the medium) direction in the medium in-plane direction, and measuring the magnetic domain magnetizing direction in the medium in-plane direction.

CONSTITUTION: Light of a mercury lamp 1 is deflected (2), and passes through a prism 3, and is condensed, and is made incident, and is reflected on a measurement sample 5 by an objective lens 4. The reflected light is reflected in the horizontal direction by the prism 3, and an analyzer 6 generates a dark and bright **magnetic** domain **image** according to a magnetic domain structure of the sample 5, and a CCD camera 7 observes it. Image processing (8) is carried out on it, and a computer 9 to control a sample driving system 11 inputs it. The driving system 11 rotates with an observation point as its center, and changes the observing direction. The sample 5 is observed, and the range of a brightness change caused by a

difference of the magnetization direction is determined, and angle dependency of the **magnetic** domain **image** is measured, and the computer 9 takes in the **magnetic** domain **image**. Next, the distribution of illumination and an **angle** of **rotation** of the sample 5 are corrected, and an average brightness value is calculated on respective **microscopic** parts whose images are divided, and the magnetization direction of the respective **microscopic** parts is determined. Thereby, the magnetic domain structure in the medium in-plane direction can be obtained.

40/3,AB/1 (Item 1 from file: 2)
DIALOG(R)File 2:INSPEC

03703362 INSPEC Abstract Number: A90119177
Title: Solid state /sup 25/N **nuclear magnetic resonance** of /sup 15/N-labeled nylon 6 and nylon 11: observation of multiple crystalline forms and amorphous regions
Author(s): Mathias, L.J.; Powell, D.G.; Autran, J.-P.; Porter, R.S.
Author Affiliation: Dept. of Polymer Sci., Univ. of Southern Mississippi, Hattiesburg, MS, USA
Journal: Materials Science & Engineering A (Structural Materials: Properties, Microstructure and Processing) vol.A126 p.253-63
Publication Date: 15 June 1990 Country of Publication: Switzerland
CODEN: MSAPE3 ISSN: 0921-5093
U.S. Copyright Clearance Center Code: 0921-5093/90/$3.50
Conference Title: Office of Naval Research Conference on the Science of Composite Interfaces
Conference Date: 18-21 April 1989 Conference Location: Leesburg, VA, USA
Language: English
Abstract: The solid state /sup 15/N **nuclear magnetic resonance** (**NMR**) characterization of nylon 6 and nylon 11 is reported. Nylon 6 (20% /sup 15/N enriched) was prepared by anionic polymerization of isotopically enriched caprolactam, and **NMR** samples were prepared by quenching from the melt, and by slow cooling and annealing. Cross-polarization (CP)-magic-**angle-spinning** (MAS) spectra of the /sup 15/N-enriched samples showed a single sharp peak (alpha crystal form) at 84.2 ppm (relative to glycine) and a broader resonance at 87.2 ppm. Relaxation experiments were conducted to determine T/sub 1N/, T/sub 1H/ and T/sub 1 rho / for each sample at 300 K. The crystalline resonance was found to have T/sub 1N/ values of 125-416 s, while the down-**field** peak had **two** measurable T/sub 1N/ values, one component with a T/sub 1/ of 1-3 s and a second with the longer T/sub 1/ of 19-29 s. The two components of the **non-crystalline** peak are thought to belong to a liquid-like amorphous region and a more rigid 'interphase' region lying between the crystalline and amorphous regions.
Subfile: A

40/3,AB/2 (Item 1 from file: 8)
DIALOG(R)File 8:Ei Compendex(R)

02984376
E.I. Monthly No: EIM9011-044919
Title: Solid state **1**5N **nuclear magnetic resonance** of **1**5N-labeled nylon 6 and nylon 11. Observation of multiple crystalline forms and amorphous regions.
Author: Mathias, Lon J.; Powell, Douglas G.; Autran, Jean-Philippe; Porter, Roger S.
Corporate Source: Univ of Southern Mississippi, Hattiesburg, MS, USA
Conference Title: Proceedings of the Office of Naval Research Conference on the Science of Composite Interfaces
Conference Location: Leesburg, VA, USA Conference Date: 19890418
E.I. Conference No.: 13452
Source: Materials Science & Engineering A: Structural Materials: Properties, Microstructure and Processing v A126 n 1-2 Jun 15 1990. p 253-263
Publication Year: 1990

CODEN: MSAPE3 ISSN: 0921-5093
Language: English
Abstract: The solid state **1**5N **nuclear magnetic resonance** (**NMR**) characterization of nylon 6 and nylon 11 is reported. Nylon 6 (20% **1**5N enriched) was prepared by anionic polymerization of isotopically enriched caprolactam, and **NMR** samples were prepared by quenching from the melt, and by slow cooling and annealing. Cross-polarization (CP)-magic-**angle-spinning** (MAS) spectra of the **1**5N-enriched samples showed a single sharp peak (alpha crystal form) at 84.2 ppm (relative to glycine) and a broader resonance at 87.2 ppm. Relaxation experiments were conducted to determine T//1//N, T//1//H and T//1// rho for each sample at 300 K. The crystalline resonance was found to have T//1//N values of 125-416 s, while the down-**field** peak had **two** measurable T//1//N values, one component with a T//1 of 1-3 s and a second with the longer T//1 of 19-29 s. The two components of the **non-crystalline** peak are thought to belong to a liquid-like amorphous region and a more rigid 'interphase' region lying between the crystalline and amorphous regions. T//1// rho measurements were consistent with two-phase morphology although two-component decay for the amorphous region was not observed. **1H T//1 measurements were apparently dominated by spin diffusion that masked any differences between the regions. (Edited author abstract) 33 Refs.

40/3,AB/3 (Item 1 from file: 434)
DIALOG(R)File 434:SciSearch(R) Cited Ref Sci

09452555 Genuine Article#: U3326 Number of References: 150
Title: THE STRUCTURE OF AMORPHOUS HYDROGENATED SILICON AND ITS ALLOYS - A REVIEW
Author(s): ELLIOTT SR
Corporate Source: UNIV CAMBRIDGE,DEPT PHYS CHEM,LENSFIELD RD/CAMBRIDGE//ENGLAND/
Journal: ADVANCES IN PHYSICS, 1989, V38, N1, P1-88
Language: ENGLISH Document Type: REVIEW

51/3,AB/1 (Item 1 from file: 350)
DIALOG(R)File 350:Derwent WPIX

007243852
WPI Acc No: 1987-240859/198734
XRPX Acc No: N87-179999
Magneto-sensitive element - has **two magneto** diodes located on permanent magnet endface closer to tested **ferromagnetic**
Patent Assignee: METALNIKOV V V (META-I)
Inventor: FATTAKHDIN A U; SAFRONKIN G V
Number of Countries: 001 Number of Patents: 001
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
SU 1282026	A	19870107	SU 3954284	A	19850920	198734	B

Priority Applications (No Type Date): SU 3954284 A 19850920
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
SU 1282026	A		3		

Abstract (Basic): SU 1282026 A

During movement of the **ferromagnetic** article relative to magneto-diodes (2,3), they form changing signals with magnitudes depending on the gap between them and the article and also on the initial voltage produced by the **magnetic field** of a permanent **magnet**. The initial voltage depends on the **angle** of incline of the axes of diodes (2,3) relative to the magnet.

Diode (3) is inclined to reduce its sensitivity and signals from diodes (2,3) are summed by an operational amplifier. During temp. variation, the sensitivities of diodes (2,3) are altered, extending the operating temp. range.

USE - Measurement of **rotation** frequency, movement, **angles** and **magnetic field** induction. Bul.1/7.1.87.
(3pp Dwg.No.1/2)

51/3,AB/2 (Item 2 from file: 350)
DIALOG(R)File 350:Derwent WPIX

004185068
WPI Acc No: 1985-011948/198502
XRPX Acc No: N85-008592
Rotational angle detection device - has **two magneto** restrictive sensing elements at 45 degrees sensing rotary position of permanent magnet
Patent Assignee: NIPPON ELECTRIC CO (NIDE)
Inventor: ITO S
Number of Countries: 001 Number of Patents: 001
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
US 4490674	A	19841225	US 82442690	A	19821118	198502	B

Priority Applications (No Type Date): JP 81184802 A 19811118
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
US 4490674	A		10		

Abstract (Basic): US 4490674 A

A permanent magnet is rotatable in response to the rotation of a rotary shaft for generating a rotating **magnetic field**.A power supply provides sine and cosine waves. A **magnetic field** sensor receives these waves and responds to the **magnetic field** of the permanent **magnet** to generate altered sine and cosine wave outputs having phase **angles** dependent upon the rotational position of the permanent magnet.

The **magnetic field** sensor comprises at least **two** **magnetor**-resistive sensing elements formed of **ferromagnetic** material and positioned to form a 45 deg. **angle** between them. Voltage and phase difference detectors are used as well as a **rotational angle** calculator.

USE/ADVANTAGE - Accurate detection of **rotational angle** of shaft attached to motor or gear for control of precision instrument. Simplified and less expensive.

51/3,AB/3 (Item 1 from file: 347)
DIALOG(R)File 347:JAPIO

05645944
MAGNETORESISTANCE EFFECT ELEMENT AND MAGNETIC HEAD WITH IT

PUB. NO.: 09-260744 [JP 9260744 A]
PUBLISHED: October 03, 1997 (19971003)
INVENTOR(s): NAKABAYASHI KEIYA
KOMODA TOMOHISA
UNEYAMA KAZUHIRO
KIRA TORU
APPLICANT(s): SHARP CORP [000504] (A Japanese Company or Corporation), JP (Japan)
APPL. NO.: 08-069992 [JP 9669992]
FILED: March 26, 1996 (19960326)

ABSTRACT

PROBLEM TO BE SOLVED: To realize a high sensitivity magnetoresistance effect element that has high reliability and has a high magnetoresistance effect to weaker external **magnetic field** and a **magnetic** head that uses it with high performance in reading out information.

SOLUTION: A magnetoresistance effect element is provided with a first or a third magnetic layer 21 to 23 that are separated by a first and a **second** non-**magnetic** layers 24 and 25, the film thickness of the **first magnetic** layer 21 is thicker than the film thickness of the **second magnetic** layer 22, and the easy axis of each magnetic layer is arranged mutually in parallel. The **second magnetic** layer 22 is combined with the **first magnetic** layer 21 with strong antiferromagnetism, the **second magnetic** layer 22 is combined with the third magnetic layer 23 with very weak **ferromagnetism**. When the **magnetic field** is applied in the direction that crosses the easy axis of each magnetic layer, all of the **magnetization** of the **first** or the third magnetic layers 21 to 23 is rotated according to the change of the **magnetic field,** and the **magnetoresistance** effect is caused by the **rotating** **angle** of the **second magnetic** layer 22 and the third magnetic layer 23.

51/3,AB/4 (Item 2 from file: 347)

04289620
ANGLE SENSOR

PUB. NO.: 05-281320 [JP 5281320 A]
PUBLISHED: October 29, 1993 (19931029)
INVENTOR(s): KAWAMOTO MIEKO
ENDOU MICHIKO
APPLICANT(s): FUJITSU LTD [000522] (A Japanese Company or Corporation), JP (Japan)
APPL. NO.: 04-082548 [JP 9282548]
FILED: April 06, 1992 (19920406)
JOURNAL: Section: P, Section No. 1685, Vol. 18, No. 64, Pg. 145, February 02, 1994 (19940202)

ABSTRACT

PURPOSE: To provide an **angle** sensor which is simple in structure, can be reduced in size and weight, and has high reliability and long service life as an **angle** sensor which outputs electric signals in correspondence with a **rotational angle**.

CONSTITUTION: The title sensor is provided with an insulating substrate 51 arranged in parallel with magnetic fluxes in a **magnetic field** formed by a permanent magnet 4 and either **one** of the **magnet** 4 and substrate 51 is rotatably held, with the other being fixed. At least four zigzag patterns 52 formed of **ferromagnetic** thin films are formed on the substrate 51, with their directions being shifted from each other by 90 deg., so as to form a bridge circuit 53.

54/3,AB/1 (Item 1 from file: 350)
DIALOG(R)File 350:Derwent WPIX

012144051
WPI Acc No: 1998-560963/199848
XRPX Acc No: N98-437368
MRI apparatus for generating tomogram of human body - has gradient **magnetic field** generator which produces gradient **magnetic field** whose basic axis is rotated based on **rotation angle** of top plate of patient bed and made in accord with standard photography axis
Patent Assignee: HITACHI MEDICAL CORP (HITR)
Number of Countries: 001 Number of Patents: 001
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
JP 10248823	A	19980922	JP 9755230	A	19970310	199848	B

Priority Applications (No Type Date): JP 9755230 A 19970310
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
JP 10248823	A		7	A61B-005/055	

Abstract (Basic): JP 10248823 A

The apparatus has a static **magnetic field** generator (2) that provides a static **magnetic field** to a patient body (1) lying on the rotatable top plate (11) of a bed (12) set in a photography area. A gradient **magnetic field** generator (3) applies a three-dimensional gradient **magnetic field** to the examined body. A signal detector determines a **nuclear magnetic resonance** signal caused in the examined body due to the irradiation of a high-frequency pulse to the examined body.

A signal processor (9) reconfigures the cross-sectional image of the examined body based on the detected **nuclear magnetic resonance** signal. The processed cross-sectional image is shown on a display device (10). The standard cross-sectional image of the examined body corresponds to the basic axis (15) of the gradient **magnetic field**. The basic axis of the gradient **magnetic field** is rotated depending on the **rotation angle** of the top plate of the bed. A standard photography axis is made in accord with the basic axis of the **magnetic** gradient **field**.

ADVANTAGE - Improves operability since standard photography axis and basic axis of gradient **magnetic field** is made in accord correctly. Prevents reduction of strength of gradient **magnetic field**.

Dwg.1/11

54/3,AB/2 (Item 2 from file: 350)
DIALOG(R)File 350:Derwent WPIX

009729244
WPI Acc No: 1994-009094/199402
XRPX Acc No: N94-007347
Pulse sequence for rapid image generation in **NMR tomography** - spacing **RF** pulses by less than spin grid relaxation time, providing read-out gradient with part pulses of alternate polarity and applying

perpendicular phase encoded gradient.
Patent Assignee: SIEMENS AG (SIEI)
Inventor: BRUDER H
Number of Countries: 004 Number of Patents: 002
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
EP 576712	A1	19940105	EP 92111274	A	19920703	199402	B
US 5337000	A	19940809	US 9378107	A	19930618	199431	

Priority Applications (No Type Date): EP 92111274 A 19920703
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
EP 576712	A1	G	10	G01R-033/56	
Designated States (Regional): DE FR IT					
US 5337000	A		10	G01V-003/00	

Abstract (Basic): EP 576712 A
A homogeneous **magnetic field** aligns nuclear spins in a region in a defined direction. A high frequency pulse (**RF**) flips the **spins** through an **angle** less than 90 deg. A read-out gradient (GRO) with partial pulses of alternating polarity is applied, whereby a nuclear resonance signal (S1,etc.) in the form of an echo occurs for each partial pulse. At least part of this signal is read out.

A phase encoding gradient (GPC) applied before each read-out signal perpendicular to the read-out gradient superimposes other phase information onto each read-out signal. The cycle is repeated a number of times with the interval between high frequency pulses less than the spin-grid-relaxation time.

USE/ADVANTAGE - For acquiring nuclear spin resonance signals from nuclei with defined spin-grid-relaxation time. Good signal/noise ratio is achieved with short measurement time and low technological requirements.

Dwg.1-6/13

Abstract (Equivalent): US 5337000 A
The method comprises generating a uniform **magnetic field** in which the examination region is disposed, and generating a **radio-frequency** pulse in the examination region for deflecting the nuclear spins from the prescribed direction by a prescribed flip **angle** of less than 90 deg. After each **radio -frequency** pulse, the method involves generating a read-out gradient having sub-pulses of alternating polarity, and causing a **nuclear magnetic resonance** signal in the form of an echo to arise under each subpulse.

The method then comprises generating a phase-coding gradient in a direction perpendicular to the direction of the read-out gradient, before repeating the steps M times with the same flip **angle**. The method also comprises reconstructing an image of the examination region of the subject from the read-out **nuclear magnetic resonance** signals.

USE - A method for operating **nuclear magnetic resonance tomography** device for acquisition of **nuclear magnetic resonance** signals from examination region of subject containing nuclei having prescribed spin lattice relaxation time.

10-13/13

54/3,AB/3 (Item 3 from file: 350)
DIALOG(R)File 350:Derwent WPIX

008720525
WPI Acc No: 1991-224542/199131
XRPX Acc No: N91-171391

Magnetic resonance imaging system for **tomography**
- has automatic power control function for adjusting transmission power of **RF** pulse to set desired flip **angle** of **spin**

Patent Assignee: TOSHIBA KK (TOKE)
Inventor: HANAWA M
Number of Countries: 002 Number of Patents: 002
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
EP 439119	A	19910731	EP 91100757	A	19910122	199131	B
US 5343149	A	19940830	US 91644530	A	19910123	199434	
			US 9394916	A	19930722		

Priority Applications (No Type Date): JP 9012471 A 19900124
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
EP 439119	A				
Designated States (Regional): DE					
US 5343149	A		9	G01V-003/00	Cont of application US 91644530

Abstract (Basic): EP 439119 A

In a **magnetic resonance imaging** system, a plane including only a portion of an object (P) to be examined in an imaging region having uniform field intensity is excited by using a gradient **magnetic field** Gz in the direction of the body axis of the object (P) as a slice gradient **magnetic field** regardless of a plane to be imaged. The peak values of MR echo signals are detected while the transmission power of the **RF** pulse is changed.

An **RF** pulse transmission power at which the maiximum peak value appears is detected from these detection values. The transmission power of the **RF** pulse in imaging, is attenuated on the basis of the relationship between the transmission power and the maximum peak value.

ADVANTAGE - Excellent contrast obtained. (11pp Dwg.No.4/8

Abstract (Equivalent): US 5343149 A

In a **magnetic resonance imaging** system having an automatic power control function for adjusting the transmission power of an **RF** pulse so as to set a desired flip **angle** of a **spin**, in an automatic power control mode, a plane including only a portion of an object to be examined in an imaging region having a uniform field intensity, e.g. a transaxial plane or a plane slightly inclined from the transaxial plane is excited by a gradient **magnetic field** Gz in the direction of the body axis of the object as a slice gradient **magnetic field** regardless of a plane to be imaged.

The peak values of MR echo signals are detected while the transmission power of the **RF** pulse is changed. An **RF** pulse transmission power at which the maximum peak value detected from these detection values. The transmission power of the **RF** pulse in imaging, i.e. the output of an **RF** oscillator having a predetermined frequency, is attenuated on the basis of the relationship between the transmission power and the maximum peak value, thereby adjusting the attenuation amount of an attenuator for supplying a current to an **RF** coil.

ADVANTAGE - Image data having excellent contrast can be obtained.

Dwg.4/8

54/3,AB/4 (Item 4 from file: 350)
DIALOG(R)File 350:Derwent WPIX

004723249
WPI Acc No: 1986-226591/198635
XRPX Acc No: N86-169091

Magnetic resonance imaging system for computer **tomography** - has regulator controlling power control unit on recorded **magnetic resonance** signal to ensure precise adjustment of power condition

Patent Assignee: TOSHIBA KK (TOKE)
Inventor: HANAWA M; HAYAKAWA H
Number of Countries: 002 Number of Patents: 003
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
DE 3605162	A	19860821	DE 3605162	A	19860218	198635	B
US 4675608	A	19870623	US 86829486	A	19860214	198727	
US 4806867	A	19890221	US 8752874	A	19870522	198910	

Priority Applications (No Type Date): JP 8532283 A 19850219
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
DE 3605162	A		24		

Abstract (Basic): DE 3605162 A

A regulator controls a power control unit as a function of the **magnetic resonance** signal from a detector. Pref. the regulator contains a device to register transmission power data when the detector receives the max. **magnetic resonance** signal. The regulator controls the power control unit to vary the power sequentially during excitation of the object by a rotating **magnetic field**.

The regulator may respond to a spin echo signal or a free induction drop signal produced by the magntic resonance. The power control unit may set a **spin** system inclination **angle** to a given value, e.g. 90 deg. or 180 deg. or both may be an amplitude or pulse width controller for the rotating **magnetic field** generator.

ADVANTAGE - The power condition can be adjusted precisely regardless of the particular features of the investigated object.

(24pp Dwg.No.0/5

Abstract (Equivalent): US 4806867 A

The **magnetic resonance imaging** system applies a uniform static **magnetic field** and a gradient **magnetic field** to an object it further applies an excitation rotating **magnetic** field to cause **magnetic resonance** phenomena in the object to detect the induced **magnetic resonance** signals and then to obtain image data by processing the **magnetic resonance** signals. The system has a power controller for controlling the transmission power in a transmitter for transmitting the excitation rotating field.

The system further has a transmission controller for controlling the power controller in response to the **magnetic resonance** signal which is received by the receiver from the object. The transmission controller controls the power controller to sequentially change the transmission power and detects the transmission power at which the maximum **magnetic resonance** signal is obtained in response to the reception signal by the receiver when the exciation rotating field is applied to the object, thereby controlling the power

controller in accordance with the detected data.
ADVANTAGE - Reduced imaging time required. (10pp)
US 4675608 A
A uniform static **magnetic field** and a gradient **magnetic field** are applied to an object and also an excitation rotating **magnetic** field to cause **magnetic resonance** in the object. The induced **magnetic resonance** signals are detected to obtain image data. The system has a power controller for controlling the transmission power in a transmitter for transmitting the excitation rotating field. The system also has a transmission controller which operates in response to the resonance signal received.
The controller sequentially changes the transmission power and detects the power at which the maximum resonance signal is obtained in response to the reception signal when the excitation rotating field is applied to the object. (10pp)h

54/3,AB/5 (Item 1 from file: 347)
DIALOG(R)File 347:JAPIO

03233630
HIGH FREQUENCY OUTPUT ADJUSTING METHOD

PUB. NO.: 02-209130 [JP 2209130 A]
PUBLISHED: August 20, 1990 (19900820)
INVENTOR(s): HATANAKA MASAHIKO
APPLICANT(s): TOSHIBA CORP [000307] (A Japanese Company or Corporation), JP (Japan)
APPL. NO.: 01-029330 [JP 8929330]
FILED: February 08, 1989 (19890208)
JOURNAL: Section: C, Section No. 775, Vol. 14, No. 505, Pg. 84, November 05, 1990 (19901105)

ABSTRACT

PURPOSE: To exactly set the condition of a high frequency output such as a 90 deg. pulse or 180 pulse and to obtain an exact signal by setting slice thickness tick so as to include the whole uniform area of a maximum high frequency coil when the inclination **angle** of a **spin** system magnetic moment is adjusted to a prescribed value.

CONSTITUTION: In a **nuclear magnetic resonance imaging** device 1, an inclined **magnetic field** generation coil 2 to generate an inclined **magnetic field** for obtaining the position information of a part, where a **magnetic resonance** signal is induced, and a high frequency coil 3 as a transmission/reception system to radiate a rotary high frequency **magnetic field** and to detect the induced **magnetic resonance** signal are provided. When an MR signal is obtained to set the high frequency output of the 90 deg. pulse and 180 deg. pulse, slice width S is set thick by adjusting a Z-axis inclined **magnetic field**, which is a **magnetic field** for slice, in advance so that the sensitivity of the maximum high frequency coil becomes the uniform area. Accordingly, even when a slice position is dislocated by breating motion, etc., for a part to be checked like the chest, the high frequency output of the 90 deg. pulse and 180 deg. pulse to induce a **magnetic resonance** phenomenon can be exactly adjusted and an exact **tomographic** picture can be obtained.

13/9/1 (Item 1 from file: 2)
DIALOG(R)File 2:INSPEC

7600676 INSPEC Abstract Number: A2003-11-3325-007
Title: Recoupling of chemical shift anisotropies in solid-state NMR **under high-speed magic-** angle spinning **and in uniformly /sup 13/C-labeled systems**
Author(s): Chan, J.C.C.; Tycko, R.
Author Affiliation: Lab. of Chem. Phys., Nat. Inst. of Diabetes & Digestive & Kidney Diseases, Bethesda, MD, USA
Journal: Journal of Chemical Physics vol.118, no.18 p.8378-89
Publisher: AIP,
Publication Date: 8 May 2003 Country of Publication: USA
CODEN: JCPSA6 ISSN: 0021-9606
SICI: 0021-9606(20030508)118:18L.8378:RCSA;1-M
Material Identity Number: J008-2003-019
U.S. Copyright Clearance Center Code: 0021-9606/2003/118(18)/8378(12)/$19.00
Language: English Document Type: Journal Paper (JP)
Treatment: Theoretical (T)
Abstract: We demonstrate the possibility of recoupling chemical shift anisotropy (CSA) interactions in solid-state **nuclear magnetic resonance** (**NMR**) under high-speed magic- **angle spinning** (MAS) while retaining a static CSA powder pattern line shape and simultaneously attenuating homonuclear dipole-dipole interactions. CSA recoupling is accomplished by a rotation-synchronized **radio - frequency** pulse sequence with symmetry properties that permit static CSA line shapes to be obtained. We suggest a specific recoupling sequence, which we call ROCSA, for which the scaling factors for CSA and homonuclear dipole-dipole interactions are 0.272 and approximately 0.05, respectively. This sequence is suitable for high-speed /sup 13/C MAS **NMR** experiments on uniformly /sup 13/C-labeled organic compounds, including biopolymers. We demonstrate the ROCSA sequence experimentally by measuring the /sup 13/C CSA patterns of the uniformly labeled, polycrystalline compounds L-alanine and N-acetyl-D,L-valine at MAS frequencies of 11 and 20 kHz. We also present experimental data for amyloid fibrils formed by a 15-residue fragment of the beta -amyloid peptide associated with Alzheimer's disease, in which four amino acid residues are uniformly labeled, demonstrating the applicability to biochemical systems of high molecular weight and significant complexity. Analysis of the CSA patterns in the amyloid fibril sample demonstrates the utility of ROCSA measurements as probes of peptide and protein conformation in **noncrystalline** solids. (44 Refs)
Subfile: A
Descriptors: chemical shift; magic **angle spinning** ; molecular biophysics; **nuclear magnetic resonance**
Identifiers: chemical shift anisotropies; solid-state **NMR** ; recoupling sequence; high-speed /sup 13/C MAS **NMR** experiments; uniformly /sup 13/C-labeled organic compounds; biopolymers; N-acetyl-D,L-valine; L-alanine ; 15-residue fragment; alpha -amyloid peptide; Alzheimer's disease; amino acid residues; biochemical systems; molecular weight; amyloid fibril; **noncrystalline** solids; rotation-synchronized **radio - frequency** pulse sequence; homonuclear dipole-dipole interaction attenuation; high-speed magic- **angle spinning** ; powder pattern; uniformly /sup 13/C-labeled systems; ROCSA sequence; 11 kHz; 20 kHz
Class Codes: A3325 (Nuclear magnetic resonance and relaxation in molecules; nuclear quadrupole resonance (NQR)); A8715B (Biomolecular structure, configuration, conformation, and active sites)
Numerical Indexing: frequency 1.1E+04 Hz; frequency 2.0E+04 Hz

13/9/2 (Item 2 from file: 2)
DIALOG(R)File 2:INSPEC

03791156 INSPEC Abstract Number: A91018563
Title: Measurement of nuclear magnetic dipole-dipole couplings in magic angle spinning NMR
Author(s): Tycko, R.; Dabbagh, G.
Author Affiliation: AT&T Bell Labs., Murray Hill, NJ, USA
Journal: Chemical Physics Letters vol.173, no.5-6 p.461-5
Publication Date: 19 Oct. 1990 Country of Publication: Netherlands
CODEN: CHPLBC ISSN: 0009-2614
U.S. Copyright Clearance Center Code: 0009-2614/90/$03.50
Language: English Document Type: Journal Paper (JP)
Treatment: Theoretical (T); Experimental (X)
Abstract: The authors describe a method for measuring nuclear magnetic dipole-dipole couplings in **NMR** spectra of solids undergoing rapid magic **angle spinning** (MAS). They show in theory, simulations, and experiments that the couplings, which are averaged out by MAS alone, can be recovered by applying simple resonant **radiofrequency** pulse sequences in synchrony with the sample rotation. Experimental /sup 13/C dipolar powder pattern spectra of polycrystalline (/sup 13/CH/sub 3/)/sub 2/C(OH)SO/sub 3/Na obtained in a two-dimensional experiment based on this method are presented. The method provides a means of determining internuclear distances in polycrystalline and **noncrystalline** solids while retaining the high resolution and sensitivity afforded by MAS. (28 Refs)
Subfile: A
Descriptors: nuclear magnetic moment; **nuclear magnetic resonance** ; organic compounds
Identifiers: acetone bisulphite Na adduct; nuclear magnetic dipole-dipole couplings; magic **angle spinning** ; **NMR** ; polycrystalline; two-dimensional; internuclear distances
Class Codes: A7660 (Nuclear magnetic resonance and relaxation)
?

21/9/1 (Item 1 from file: 2)
DIALOG(R)File 2:INSPEC

8147607 INSPEC Abstract Number: A2004-23-7660C-006
Title: High-resolution NMR **of static samples by rotation of the** magnetic field
Author(s): Meriles, C.A.; Sakellariou, D.; Moule, A.; Goldman, M.; Budinger, T.F.; Pines, A.
Author Affiliation: Dept. of Chem., California Univ., Berkeley, CA, USA
Journal: Journal of Magnetic Resonance vol.169, no.1 p.13-18
Publisher: Academic Press,
Publication Date: July 2004 Country of Publication: USA
CODEN: JOMRA4 ISSN: 1090-7807
SICI: 1090-7807(200407)169:1L.13:HRSS;1-7
Material Identity Number: J153-2004-008
U.S. Copyright Clearance Center Code: 1090-7807/04/$30.00
Language: English Document Type: Journal Paper (JP)
Treatment: Experimental (X); Theoretical (T)
Abstract: Mechanical rotation of a sample at 54.7 degrees with respect to the static **magnetic field**, so-called magic-angle **spinning** (MAS), is currently a routine procedure in **nuclear magnetic resonance** (**NMR**). The technique enhances the spectral resolution by averaging away anisotropic **spin** interactions thereby producing isotropic-like spectra with resolved chemical shifts and scalar couplings. It should be possible to induce similar effects in a static sample if the direction of the **magnetic field** is varied, e.g., magic- **angle rotation** of the B/sub 0/ field (B/sub 0/-MAS). Here, this principle is experimentally demonstrated in a static sample of solid hyperpolarized xenon at ~3.4 mT. By extension to moderately high fields, it is possible to foresee interesting applications in situations where physical manipulation of the sample is inconvenient or impossible. Such situations are expected to arise in many cases from materials to biomedicine and are particularly relevant to the novel approach of ex situ **NMR** spectroscopy and imaging. (24 Refs)
Subfile: A
Descriptors: chemical shift; magic angle **spinning** ; **magnetic fields** ; xenon
Identifiers: high-resolution **NMR** ; static sample; **magnetic field** rotation; mechanical rotation; static **magnetic field** ; magic-angle **spinning** ; MAS; **nuclear magnetic resonance** ; **NMR** ; spectral resolution enhancement; anisotropic **spin** interactions; isotropic-like spectra; chemical shift; scalar coupling; **magnetic field** direction; magic- **angle rotation** ; B/sub 0/ field; solid hyperpolarized xenon; ex situ **NMR** spectroscopy; ex situ **NMR** imaging; 3.4 mT; Xe
Class Codes: A7660C (Chemical and Knight shifts (condensed matter NMR))
Chemical Indexing:
Xe el (Elements - 1)
Numerical Indexing: magnetic flux density 3.4E-03 T

21/9/2 (Item 2 from file: 2)
DIALOG(R)File 2:INSPEC

6969440 INSPEC Abstract Number: A2001-15-8715M-022
Title: Study of slow molecular motions in alpha -crystallin by proton magnetic spin **-lattice relaxation in the doubly rotating frame**
Author(s): Krushelnitsky, A.G.; Mefed, A.E.; Kharitonov, A.A.; Fedotov, V.D.

Author Affiliation: Inst. of Biochem. & Biophys., Acad. of Sci., Kazan, Russia
Journal: Applied Magnetic Resonance vol.20, no.1-2 p.207-29
Publisher: Springer-Verlag,
Publication Date: 2001 Country of Publication: Austria
CODEN: APMREI ISSN: 0937-9347
SICI: 0937-9347(2001)20:1/2L.207:SSMM;1-L
Material Identity Number: 0521-2001-003
U.S. Copyright Clearance Center Code: 0937-9347/2001/$0.00+0.20
Language: English Document Type: Journal Paper (JP)
Treatment: Experimental (X)

Abstract: Proton magnetic **spin** -lattice relaxation in the effective field H/sub 2/ acting in the doubly rotating frame (DRF) was first applied to the study of slow internal protein dynamics in the submillisecond range of correlation times in the solid state. In this method the local dipolar **magnetic field** is reduced by the magic- **angle rotating** -frame method so that the resonance frequency of the relaxation experiment may be set below the value of the local field. As a result, unachievable by the standard **nuclear magnetic resonance** (**NMR**) relaxation techniques, slow molecular motions become experimentally accessible. The **second** effective **field** H/sub 2/ is produced by the shallow sine-wave phase modulation of the H/sub 1/ pulse. The registration of the DRF **spin** -lattice relaxation signal takes place directly during the continuous H/sub 1/ pulse by means of an additional low- **frequency radio - frequency** coil oriented along the H/sub 0/ field and operating at the rotating-frame **NMR** frequency of 100 kHz. The measurements of the **spin** -lattice relaxation time in the DRF within a wide temperature range have been performed in dry and hydrated a-crystallin powders. This is the major protein in the eye lens, which prevents the uncontrolled aggregation of proteins and keeps the lens transparent. The results demonstrate that the protein hydration does not change the amplitude of slow side-chain motions but significantly shortens its correlation time: from about 50 to about 0.5 mu s in dry and hydrated samples, respectively. The hydration also decreases the activation energy and restricts the distribution of the correlation times. (40 Refs)

Subfile: A
Descriptors: molecular biophysics; molecular reorientation; nuclear **spin** -lattice relaxation; proteins; **proton** magnetic resonance
Identifiers: slow molecular motion; alpha -crystallin; proton magnetic **spin** -lattice relaxation; doubly rotating frame; slow internal protein dynamics; submillisecond range; correlation times; local dipolar **magnetic field** ; magic- **angle rotating** -frame method; resonance frequency; shallow sine-wave phase modulation; H/sub 1/ pulse; **spin** -lattice relaxation signal; low- **frequency radio - frequency** coil; rotating-frame **NMR** frequency; **spin** -lattice relaxation time; hydrated a-crystallin powders; protein; eye lens; protein hydration; slow side-chain motion; correlation time; activation energy
Class Codes: A8715M (Interactions with radiations at the biomolecular level); A8715B (Biomolecular structure, configuration, conformation, and active sites); A8715H (Biomolecular dynamics, molecular probes, molecular pattern recognition)

21/9/3 (Item 3 from file: 2)
DIALOG(R)File 2:INSPEC

4552373 INSPEC Abstract Number: A9402-8780-037
Title: Effects of collagen orientation on MR imaging **characteristics of bovine articular cartilage**

Author(s): Rubenstein, J.D.; Kim, J.K.; Morava-Protzner, I.; Stanchev, P.L.; Henkelman, R.M.
Author Affiliation: Dept. of Radiol., Toronto Univ., Ont., Canada
Journal: Radiology vol.188, no.1 p.219-26
Publication Date: July 1993 Country of Publication: USA
CODEN: RADLAX ISSN: 0033-8419
Language: English Document Type: Journal Paper (JP)
Treatment: Experimental (X)
Abstract: To determine the influence of collagen orientation on the **magnetic resonance** (**MR**) **imaging** appearance of articular cartilage, **spin** -echo **MR images** of normal bovine patellar specimens were obtained with the specimen rotated in 5 degrees increments between +75 degrees and -130 degrees . Hyperintense superficial, hypointense middle, and intermediate-intensity deep laminae were observed. Results of polarized light microscopy of histological specimens confirmed the three zones, and transmission electron microscopy showed different collagen arrangements in the zones. An anisotropic effect of rotation on signal intensity was evident, especially in the hypointense second lamina. Because of the preferential alignment of water molecules associated with collagen, **angular rotation** of the cartilage in the direction of minimum dipolar coupling (55 degrees to the **magnetic field**) caused the cartilage to have a homogeneous appearance. The **MR imaging** appearance of these layers is strongly influenced by an anisotropic arrangement of the collagen fibers and by the alignment of the specimen relative to the **magnetic field** . (33 Refs)
Subfile: A
Descriptors: biological **NMR** ; proteins
Identifiers: collagen orientation effects; **MR imaging** characteristics ; bovine articular cartilage; deep laminae; polarized light microscopy; histological specimens; anisotropic effect; signal intensity; minimum dipolar coupling; anisotropic arrangement
Class Codes: A8780 (Biophysical instrumentation and techniques); A8740 (Biomagnetism)

21/9/4 (Item 4 from file: 2)
DIALOG(R)File 2:INSPEC

03974927 INSPEC Abstract Number: A91123120
Title: Optically detected magnetic resonance **of group-IV and group-VI impurities in AlAs and Al/sub x/Ga/sub 1-x/As with x>or=0.35**
Author(s): Glaser, E.R.; Kennedy, T.A.; Molnar, B.; Sillmon, R.S.; Spencer, M.G.; Mizuta, M.; Kuech, T.F.
Author Affiliation: Naval Res. Lab., Washington, DC, USA
Journal: Physical Review B (Condensed Matter) vol.43, no.18 p. 14540-56
Publication Date: 15 June 1991 Country of Publication: USA
CODEN: PRBMDO ISSN: 0163-1829
Language: English Document Type: Journal Paper (JP)
Treatment: Experimental (X)
Abstract: Optically detected **magnetic** - **resonance** (ODMR) experiments have been performed on n-doped epitaxial layers of AlAs and Al/sub x/Ga/sub 1-x/As with x>or=0.35 grown on (001) GaAs substrates. The Al/sub x/Ga/sub 1-x/As layers were doped during growth or via implantation with Si and Sn impurities from group IV and S, Se, and Te impurities from group VI. The studies were carried out with the as-grown layers on the parent GaAs substrates, removed from the substrates, and attached to substrates with larger lattice constants at low temperatures. Symmetry information was obtained from **angular** - **rotation** studies, with the **magnetic field**

rotated in the (110) and (001) crystal planes. Also, uniaxial stress along the (110) and (100) directions has been combined with ODMR to further probe the symmetry of the donor states. The **magnetic resonance** was detected mainly on deep (1.0-1.8 mu m) radiative-recombination processes. The donor state in Si-doped AlAs can be described by the usual hydrogenic effective-mass theory for substitutional donors on the group-III site associated with the X-point conduction-band minima. The g-value anisotropy and splitting observed from the rotation studies in the (110) and (001) planes, respectively, can be understood using an independent-valley model. The Si-donor g values in AlAs are the following: g/sub perpendicular to /=1.976+or-0.001 and g/sub ///=1.917+or-0.001 with respect to the long axes of the X-valley ellipsoid. The results obtained for the Al/sub x/Ga/sub 1-x/As layers doped with S, Se, and Te, particularly for samples with x>or=0.6, can be described by the hydrogenic effective-mass theory modified by a finite valley-orbit (i.e., central cell) interaction that mixes the states derived from the X/sub x/, x/sub y/, and X/sub z/ valleys to form an A/sub 1/ ground state, as predicted by Morgan. Analyses of these results within the virtual-crystal approximation yield valley-orbit splitting energies (i.e., chemical shifts) of approximately 16-20 meV for these group-VI donors in Al/sub 0.6/Ga/sub 0.4/As. The nature of the donor states in the Si-doped Al/sub x/Ga/sub 1-x/As heterostructures with x<1 is more complicated. The monotonic decrease in both the g-value anisotropy and splitting with decreasing Al mole fraction and the increase in the linewidth of the donor resonances from 7 mT for AlAs:Si to 14 mT for Al/sub 0.4/Ga/sub 0.6/As:Si indicate a breakdown of the independent-valley model employed to describe the symmetry of the donor ground state in Si-doped AlAs. Various mechanisms that can potentially influence the properties of the donor ground state in Si-doped Al/sub x/Ga/sub 1-x/As with x<1, such as a finite **spin** -valley interaction, L-X (or Gamma -X) interband mixing, and alloy disorder, are discussed. The results for the Sn-doped AlAs and Al/sub x/Ga/sub 1-x/As/GaAs heterostructures provide evidence that the optically active states revealed in these studies are much deeper compared to the Si donor states. (46 Refs)

Subfile: A

Descriptors: aluminium compounds; conduction bands; gallium arsenide; III-V semiconductors; impurity electron states; microwave-optical double resonance; selenium; semiconductor epitaxial layers; semiconductor superlattices; silicon; sulphur; tellurium; tin

Identifiers: optically detected **magnetic resonance** ; ODMR; n-doped epitaxial layers; implantation; impurities; lattice constants; **angular** - **rotation** studies; **magnetic field** rotated; donor states; radiative-recombination processes; hydrogenic effective-mass theory; X-point conduction-band minima; g-value anisotropy; splitting; independent-valley model; ground state; virtual-crystal approximation; chemical shifts; heterostructures; interband mixing; alloy disorder; optically active states; AlAs:Si(Sn)(S)(Se)(Te); Al/sub x/Ga/sub 1-x/As:Si(Sn)(S)(Se)(Te

Class Codes: A7670H (Optical double magnetic resonance (ODMR)); A7155F (Tetrahedrally bonded nonmetals); A6860 (Physical properties of thin films, nonelectronic); A6855 (Thin film growth, structure, and epitaxy); A6865 (Layer structures, intercalation compounds and superlattices: growth, structure and nonelectronic properties)

Chemical Indexing:

AlAs:SiSnSSeTe ss - SiSnSSeTe ss - Al ss - As ss - Se ss - Si ss - Sn ss - Te ss - S ss - AlAs bin - Al bin - As bin - SiSnSSeTe dop - Se dop - Si dop - Sn dop - Te dop - S dop (Elements - 2,5,7)

AlGaAs:SiSnSSeTe ss - SiSnSSeTe ss - AlGaAs ss - Al ss - As ss - Ga ss - Se ss - Si ss - Sn ss - Te ss - S ss - SiSnSSeTe dop - Se dop - Si dop - Sn dop - Te dop - S dop (Elements - 3,5,8)

21/9/5 (Item 5 from file: 2)
DIALOG(R)File 2:INSPEC

03412892 INSPEC Abstract Number: A89088127
Title: High-resolution phosphorus-31 NMR **studies of solid phosphorus pentachloride**
Author(s): Harris, R.K.; Root, A.
Author Affiliation: Dept. of Chem., Durham Univ., UK
Journal: Molecular Physics vol.66, no.5 p.993-1013
Publication Date: 10 April 1989 Country of Publication: UK
CODEN: MOPHAM ISSN: 0026-8976
U.S. Copyright Clearance Center Code: 0026-8976/89/$3.00
Language: English Document Type: Journal Paper (JP)
Treatment: Experimental (X)
Abstract: The /sup 31/PNMR band shapes and **spin** -lattice relaxation times for solid PCl/sub 5/ have been studied under conditions of magic- **angle rotation** for both the phase II and phase III forms. Temperature and **magnetic field** were both varied. The influence of molecular motion on both band shapes and T/sub 1/ is discussed. Second-order effects resulting from the dipolar coupling of /sup 31/P to the quadrupolar chlorine nuclei are found to cause splittings in the spectra under certain conditions. It is postulated that Zeeman/quadrupolar cross-relaxation influences T/sub 1/ for (PCl/sub 4/)/sup +/ in phase II. (43 Refs)
Subfile: A
Descriptors: **NMR** line breadth; nuclear **spin** -lattice relaxation; phosphorus compounds
Identifiers: Zeeman-quadrupolar cross relaxation; temperature; /sup 31/P **NMR** band shapes; **spin** -lattice relaxation times; magic- **angle rotation** ; phase II; phase III; **magnetic field** ; molecular motion; dipolar coupling; splittings; PCl/sub 5
Class Codes: A7660E (Relaxation effects)
Chemical Indexing:
PCl5 bin - Cl5 bin - Cl bin - P bin (Elements - 2)

21/9/6 (Item 1 from file: 155)
DIALOG(R)File 155:MEDLINE(R)

17851735 PMID: 15833630
NMR **in rotating** magnetic fields **: magic-angle** field spinning **.**
Sakellariou Dimitris; Meriles Carlos A; Martin Rachel W; Pines Alexander
Materials Sciences Division, Lawrence Berkeley National Labs, Berkeley, CA 94720, USA.
Magnetic resonance imaging (United States) Feb 2005, 23 (2) p295-9, ISSN 0730-725X Journal Code: 8214883
Publishing Model Print
Document type: Journal Article
Languages: ENGLISH
Main Citation Owner: NLM
Record type: In Process
Subfile: INDEX MEDICUS
Magic-angle sample **spinning** is one of the cornerstones in high-resolution **NMR** of solid and semisolid materials. The technique enhances spectral resolution by averaging away rank 2 anisotropic **spin** interactions, thereby producing isotropic-like spectra with resolved chemical shifts and scalar couplings. In principle, it should be possible to induce similar effects in a static sample if the direction of the **magnetic field** is varied (e.g., magic- **angle rotation** of the B0

field). Here we will review some recent experimental results that show progress toward this goal. Also, we will explore some alternative approaches that may enable the recovery of spectral resolution in cases where the field is rotating off the magic angle. Such a possibility could help mitigate the technical problems that render difficult the practical implementation of this method at moderately strong **magnetic fields** .
Record Date Created: 20050418

21/9/7 (Item 1 from file: 6)
DIALOG(R)File 6:NTIS

1025417 NTIS Accession Number: DE83003634
Hydrogen and Deuterium NMR **of Solids by Magic-Angle** Spinning
Eckman, R. R.
California Univ., Berkeley. Lawrence Berkeley Lab.
Corp. Source Codes: 005029222; 9513034
Sponsor: Department of Energy, Washington, DC.
Report No.: LBL-14200
Oct 82 225p
Languages: English
Journal Announcement: GRAI8314; NSA0800
Portions of document are illegible. Thesis.
Order this product from NTIS by: phone at 1-800-553-NTIS (U.S. customers); (703)605-6000 (other countries); fax at (703)321-8547; and email at orders@ntis.fedworld.gov. NTIS is located at 5285 Port Royal Road, Springfield, VA, 22161, USA.
NTIS Prices: PC A10/MF A01
Country of Publication: United States
Contract No.: AC03-76SF00098

The **nuclear magnetic resonance** of solids has long been characterized by very large specral broadening which arises from internuclear dipole-dipole coupling or the nuclear electric quadrupole interaction. These couplings can obscure the smaller chemical shift interaction and make that information unavailable. Two important and difficult cases are that of hydrogen and deuterium. The development of cross polarization, heteronuclear **radiofrequency** decoupling, and coherent averaging of nuclear **spin** interactions has provided measurement of chemical shift tensors in solids. Recently, double quantum **NMR** and double quantum decoupling have led to measurement of deuterium and proton chemical shift tensors, respectively. A general problem of these experiments is the overlapping of the tensor powder pattern spectra of magnetically distinct sites which cannot be resolved. In this work, high resolution **NMR** of hydrogen and deuterium in solids is demonstrated. For both nuclei, the resonances are narrowed to obtain liquid-like isotropic spectra by high frequency rotation of the sample about an axis inclined at the magic angle, beta /sub m/ = Arccos (3/sup -1/2/), with respect to the direction of the external **magnetic field** . For deuterium, the powder spectra were narrowed by over three orders of magnitude by magic **angle rotation** with precise control of beta . A second approach was the observation of deuterium double quantum transitions under magic **angle rotation** . For hydrogen, magic **angle rotation** alone could be applied to obtain the isotropic spectrum when H/sub D/ was small. This often occurs naturally when the nuclei are semi-dilute or involved in internal motion. In the general case of large H/sub D/, isotropic spectra were obtained by dilution of exp 1 H with exp 2 H combined with magic **angle rotation** . The resolution obtained represents the practical limit for proton **NMR** of solids. (ERA citation 08:010433)
Descriptors: *Deuterium; *Hydrogen; *Solids; **Nuclear magnetic**

resonance ; Chemical shift; Spectral shift; Hamiltonians; Rotation; Molecular structure; **Spin** ; Tensors; Relaxation; **Spin** -lattice relaxation ; Coupling; **Nmr** spectrometers; Benzene
Identifiers: ERDA/400301; ERDA/010405; ERDA/400201; NTISDE
Section Headings: 99F (Chemistry--Physical and Theoretical Chemistry)

21/9/8 (Item 1 from file: 35)
DIALOG(R)File 35:Dissertation Abs Online

01350010 ORDER NO: NOT AVAILABLE FROM UNIVERSITY MICROFILMS INT'L.
NMR **STUDIES OF DIPOLAR AND QUADRUPOLAR INTERACTIONS IN SOLIDS**
Author: FISHBEIN, KENNETH W.
Degree: PH.D.
Year: 1993
Corporate Source/Institution: MASSACHUSETTS INSTITUTE OF TECHNOLOGY (0753)
Supervisor: ROBERT G. GRIFFIN
Source: VOLUME 54/11-B OF DISSERTATION ABSTRACTS INTERNATIONAL. PAGE 5684.
Descriptors: CHEMISTRY, PHYSICAL
Descriptor Codes: 0494

A variety of techniques were developed for the measurement and characterization of dipolar and quadrupolar **spin** interactions in solids using magic angle **spinning** (MAS) **nuclear magnetic resonance** (**NMR**) spectroscopy.

The quadrupolar coupling of $\sp{11}$B in a series of model compounds, polypeptide boronic acids, and boronic acid-alpha lytic protease (ALP) complexes was investigated by both lineshape and **radio frequency** nutation studies. These studies confirmed the tetrahedral coordination of boron in both the BoroPhe-ALP and BoroVal-ALP enzyme-inhibitor complexes suggested by earlier $\sp{15}$N solution **NMR** and X-ray diffraction investigations.

Multiple pulse scaling techniques were used to modify the conditions necessary to observe rotational resonance effects in the spectra of dipolar coupled homonuclear **spin** pairs. In addition to replacing the conventional, zero-quantum rotational resonance condition with a scaled condition, the application of scaling permitted single and double quantum resonances to be observed and thus resulted in the reintroduction of all terms of the full dipolar Hamiltonian truncated at high field. Together with the scaled zero-quantum effect, these new effects allow rotational resonance phenomena to be monitored at any desired **spinning** rate.

In order to facilitate the selective inversion of MAS sideband manifolds on rotational resonance, a new pulse sequence was developed in which multiple pulse scaling cycles are interleaved with a DANTE inversion pulse train. Both a simple density operator calculation and a sequence of experimental results illustrated that the time-shared DANTE-scaling sequence inverts resonances whose scaled offsets match a DANTE inversion condition. The introduction of scaling permitted selective inversions to be performed on crowded, overlapping spectra and enabled the asynchronous inversion of **spins** with large chemical shift anisotropy.

Cross polarization of protons from deuterons was demonstrated to greatly accelerate the collection of well-resolved proton spectra from randomly deuterated solids **spinning** rapidly at the magic angle. Studies of model compounds proved that by replacing the long proton **spin** -lattice relaxation time with the short deuteron T$\sb1$ as the determinant of the minimum recycle time, $\sp2$H-$\sp1$H cross polarization dramatically increased signal-to-noise per unit time despite reducing the signal

intensity per transient.

As a preparation for performing proton rotational resonance measurements of long distances in solids, proton solid state **NMR** spectra of dilute methyl groups were collected and interpreted. Spectra were obtained for zinc acetate samples in which CH$\sb3$ groups were doped into the perdeuterated salt at decreasing concentrations. In this way, the spectroscopic effects of intermolecular and intramolecular dipolar couplings were separated. For tenfold or greater dilution, the methyl protons gave rise to sharp, well-defined **spinning** sidebands under magic **angle** **rotation** and exhibited echo refocussing behavior resembling that of an isolated single proton. (Copies available exclusively from MIT Libraries, Rm. 14-0551, Cambridge, MA 02139-4307. Ph. 617-253-5668; Fax 617-253-1690.)

21/9/10 (Item 2 from file: 144)
DIALOG(R)File 144:Pascal

08269421 PASCAL No.: 88-0269942
Variation of the NMR **lineshape with the** RF **pulse length in non-equilibrium three-** spin **systems**
VUORIMAKI A H; PUNKKINEN M; YLINEN E E
Unit. Turku, Wihuri physical lab., Turku 20500, Finland
Journal: Journal of physics. C. Solid state physics, 1987, 20 (28) L749-L753
ISSN: 0022-3719 CODEN: JPSOAW Availability: CNRS-577E
No. of Refs.: 13 ref.
Document Type: P (Serial) ; A (Analytic)
Country of Publication: United Kingdom
Language: ENGLISH

Les calculs de mecanique quantique montrent que si le systeme de trois noyaux de **spin** 1/2 formant un triangle equilateral n'est pas descriptible par une temperature de **spin** , la forme de son signal de precession libre depend fortement de l'angle de rotation de l'impulsion haute frequence. Une telle situation est preparee par la sequence d'impulsions theta SUB x -t SUB 1 - theta SUB x qui change les populations des niveaux A SUB +- SUB 3 SUB / SUB 2 et A SUB +- SUB 1 SUB / SUB 2 sans produire aucune energie dipolaire. Ces previsions sont verifiees experimentalement sur un monocristal de CF SUB 3 000Ag

English Descriptors: **Nuclear magnetic resonance** ; Spectral line profile; Pulse width; Free induction; Pulse sequence; Rotation angle; Magnetization; Theoretical study; Verification; Experimental study; Inorganic compound; Organic salt; Single crystal

French Descriptors: Resonance magnetique nucleaire; Profil raie spectrale; Duree impulsion; Precession libre; Sequence impulsion; **Angle** rotation ; Aimantation; Etude theorique; Verification; Etude experimentale; Compose mineral; Sel organique; Monocristal; Argent Acetate(trifluoro)

Classification Codes: 001B11F01

21/9/11 (Item 3 from file: 144)
DIALOG(R)File 144:Pascal

05774429 PASCAL No.: 84-0275528
Cylindrical spinner **and speed controller for magic angle** spinning

nuclear magnetic resonance
LEE J N; ALDERMAN D W; JIANG YI JIN; ZILM K W; MAYNE C L; PUGMIRE R J; GRANT D M
Univ. Salt Lake City, dep. chemistry, Salt Lake City UT 84112, USA
Journal: Review of scientific Instruments, 1984, 55 (4) 516-520
ISSN: 0034-6748 Availability: CNRS-151
No. of Refs.: 32 ref.
Document Type: P (Serial) ; A (Analytic)
Country of Publication: USA
Language: English

English Descriptors: **Radiofrequency** spectrometry; **NMR** spectrometry; Magic **angle** ; **Rotation** ; Rotor

French Descriptors: Spectrometrie hertzienne; Spectrometrie RMN; Angle magique; Rotation; Rotor

Classification Codes: 001A03B08

21/9/16 (Item 5 from file: 34)
DIALOG(R)File 34:SciSearch(R) Cited Ref Sci

08631876 Genuine Article#: 309QC Number of References: 61
Title: Synchronous helical pulse sequences in magic-angle spinning nuclear magnetic resonance **: Double quantum recoupling of multiple-** spin **systems**
Author(s): Brinkmann A (REPRINT) ; Eden M; Levitt MH
Corporate Source: UNIV STOCKHOLM,ARRHENIUS LAB, DIV PHYS CHEM/S-10691 STOCKHOLM//SWEDEN/ (REPRINT)
Journal: JOURNAL OF CHEMICAL PHYSICS, 2000, V112, N19 (MAY 15), P8539-8554
ISSN: 0021-9606 Publication date: 20000515
Publisher: AMER INST PHYSICS, 2 HUNTINGTON QUADRANGLE, STE 1NO1, MELVILLE, NY 11747-4501
Language: English Document Type: ARTICLE
Geographic Location: SWEDEN
Subfile: CC PHYS--Current Contents, Physical, Chemical & Earth Sciences
Journal Subject Category: PHYSICS, ATOMIC, MOLECULAR & CHEMICAL
Abstract: Some general principles of **radio - frequency** pulse sequence design in magic-angle **spinning nuclear magnetic resonance** are discussed. Sequences with favorable dipolar recoupling properties may be designed using synchronous helical modulations of the space and **spin** parts of the **spin** Hamiltonian. The selection rules for the average Hamiltonian may be written in terms of three symmetry numbers, two defining the winding numbers of the space and **spin** helices, and one indicating the number of phase rotation steps in the **radio - frequency** modulation. A diagrammatic technique is used to visualize the space- **spin** symmetry selection. A pulse sequence C14(4)(5) is designed which accomplishes double-quantum recoupling using a low ratio of **radio frequency** field to **spinning** frequency. The pulse sequence uses 14 **radio frequency** modulation steps with space and **spin** winding numbers of 4 and 5, respectively. The pulse sequence is applied to the double-quantum spectroscopy of C-13(3)-labeled L-alanine. Good agreement is obtained between the experimental peak intensities, analytical results, and numerically exact simulations based on the known molecular geometry. The general symmetry properties of double quantum peaks in recoupled multiple- **spin** systems are discussed. A supercycle scheme which compensates homonuclear recoupling

sequences for chemical shifts is introduced. We show an experimental double-quantum C-13 spectrum of [U-C-13]-L-tyrosine at a **spinning** frequency of 20.000 kHz. (C) 2000 American Institute of Physics. [S0021- 9606(00)01214-9].

Identifiers--KeyWord Plus(R): SOLID-STATE **NMR** ; BAND POLARIZATION-TRANSFER; MOLECULAR TORSIONAL **ANGLE** ; **ROTATING** SOLIDS; CORRELATION SPECTROSCOPY; COHERENCE; DYNAMICS; SIMULATION; COUPLINGS; SPECTRA

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21/9/27 (Item 1 from file: 350)
DIALOG(R)File 350:Derwent WPIX

002114071
WPI Acc No: 1979-D3991B/197915
Nuclear magnetic resonance **gyroscope with unequal fields - has pairs of difference sensors for measuring differences in phases between pairs of filter outputs**
Patent Assignee: SINGER CO (SING)
Inventor: GREENWOOD I A
Number of Countries: 001 Number of Patents: 001
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
US 4147974	A	19790403				197915	B

Priority Applications (No Type Date): US 77770884 A 19770222

Abstract (Basic): US 4147974 A
In the gyroscope the direction of the **magnetic fields** intersecting the absorption cells of two interconnected **spin** generators may be oriented in the same or opposite directions, but are of unequal magnitude. The output from each **spin** generator comprises signals having frequencies characteristic of the two isotopes contained in the cell of each **spin** generator. These signals are applied to filer circuits each of which passes a desired frequency.

Two signals are multiplied in frequency. A pair of phase difference sensors measure differences in phase between pairs of filter outputs, and controls the **spin** generators in such a manner as to return a first function of the phase differences to null. The output signal from the instrument, derived from a second function of the phase differences, represents the **angular rotation** of the gyro about a predetermined axis.
Title Terms: NUCLEAR; MAGNETIC; RESONANCE; GYRO; UNEQUAL; FIELD; PAIR; DIFFER; SENSE; MEASURE; DIFFER; PHASE; PAIR; FILTER; OUTPUT
Derwent Class: S01
International Patent Class (Additional): **G01R-033/08**
File Segment: EPI
?

25/9/1 (Item 1 from file: 2)
DIALOG(R)File 2:INSPEC

01476849 INSPEC Abstract Number: A80028931
Title: Structure of amorphous polyethylene from n.m.r. line shape analysis and MAR-n.m.r
Author(s): Schneider, B.; Jakes, J.; Pivcova, H.; Doskocilova, D.
Author Affiliation: Inst. of Macromolecular Chem., Czechoslovak Acad. of Sci., Prague, Czechoslovakia
Journal: Polymer vol.20, no.8 p.939-42
Publication Date: Aug. 1979 Country of Publication: UK
CODEN: POLMAG ISSN: 0032-3861
Language: English Document Type: Journal Paper (JP)
Treatment: Experimental (X)
Abstract: Based on results of proton **nuclear magnetic resonance** measurements with magic **angle rotation** (MAR n.m.r.), the line of amorphous polyethylene in conventionally measured proton n.m.r. spectra is described as a convolution of a basic narrow line-shape function S(nu) with an orientation-dependent dipolar broadening function G(nu). With this approach it is possible to describe the broadline n.m.r. spectrum of polyethylene as a superposition of the crystalline component and of a single amorphous phase. The fit of experimental and computed spectra, and the parameters obtained by this type of line-shape analysis are discussed for a series of polyethylene samples of different crystallinity. (17 Refs)
Subfile: A
Descriptors: amorphous state; **noncrystalline** state structure; polymers; **proton magnetic resonance**
Identifiers: amorphous polyethylene; proton **nuclear magnetic resonance** ; magic **angle rotation** ; amorphous polyethylene; dipolar broadening function; crystallinity; **NMR** line shape analysis; broadline **NMR**
Class Codes: A6140K (Polymers, elastomers, and plastics); A7660 (Nuclear magnetic resonance and relaxation)